GLOSSARY AND ABBREVIATIONS

Act: The Clean Water Act.

ADEC: Alaska Department of Environmental Conservation.

Administrator: Administrator of the U.S. Environmental Protection Agency

Agency: The U.S. Environmental Protection Agency.

Annular Injection: Injection of fluids into the space between the drill string or production tubing and the open hole or well casing.

Annulus or Annular Space: The space between the drill string or casing and the wall of the hole or casing.

AOGA: Alaskan Oil and Gas Association.

API: American Petroleum Institute.

ASTM: American Society of Testing and Materials.

Barite: Barium sulfate. An additive used to increase drilling fluid density.

Barrel (bbl): 42 United States gallons at 60 degrees Fahrenheit.

BAT: The best available technology economically achievable, under Section 304(b)(2)(B) of the Clean Water Act.

BADCT: The best available demonstrated control technology, for new sources under Section 306 of the Clean Water Act.

BCT: The best conventional pollutant control technology, under Section 301(b)(2)(E) of the Clean Water Act.

BMP: Best Management Practices under Section 304(e) of the Clean Water Act.

BOD: Biochemical oxygen demand.

BOE: Barrels of oil equivalent. Used to put oil production and gas production on a comparable volume basis. 1 BOE = 42 gallons of diesel and 1,000 scf of natural gas = 0.178 BOE.

BOP: Blowout Preventer

bpd: Barrels per day.

BPJ: Best Professional Judgment.

BPT: The best practicable control technology currently available, under section 304(b)(1) of the Clean Water Act.

bpy: Barrels per year.

Brine: Water saturated with or containing high concentrations of salts including sodium chloride, calcium chloride, zinc chloride, calcium nitrate, etc. Produced water is often called brine.

BTU: British Thermal Unit.

Casing: Large steel pipe used to "seal off" or "shut out" water and prevent caving of loose gravel formations when drilling a well. When the casings are set and cemented, drilling continues through and below the casing with a smaller bit. The overall length of this casing is called the casing string. More than one string inside the other may be used in drilling the same well.

CBI: Confidential Business Information.

Centrifuge: Filtration equipment that uses centrifugal force to separate substances of varying densities. A centrifuge is capable of spinning substances at high speeds to obtain high centrifugal forces. Also called the shake-out or grind-out machine.

cfd: cubic feet per day

CFR: Code of Federal Regulations.

Clean Water Act (CWA): The Federal Water Pollution Control Act of 1972 (33 U.S.C. 1251 et seq.), as amended by the Clean Water Act of 1977 (Pub. L. 95-217) and the Water Quality Act of 1987 (Pub. L. 100-4).

CO: Carbon Monoxide.

Completion: Activities undertaken to finish work on a well and bring it to productive status.

Condensate: Liquid hydrocarbons which are in the gaseous state under reservoir conditions but which become liquid either in passage up the hole or in the surface equipment.

Connate Water: Water that was laid down and entrapped with sedimentary deposits as distinguished from migratory waters that have flowed into deposits after they were laid down.

Conventional Pollutants: Constituents of wastewater as determined by Section 304(a)(4) of the Act, including, but not limited to, pollutants classified as biochemical oxygen demanding, suspended solids, oil and grease, fecal coliform, and pH.

Deck Drainage: All wastes resulting from platform washings, deck washings, spills, rainwater, and runoff from curbs, gutters, and drains, including drip pans and wash areas.

Depth Interval: Interval at which a drilling fluid system is introduced and used, such as from 2,200 to 2,800 ft.

Development Facility: Any fixed or mobile structure addressed by this document that is engaged in the drilling of potentially productive wells.

Dewatering Effluent: The wastewater derived from dewatering drill cuttings.

Diesel Oil: The grade of distillate fuel oil, as specified in the American Society for Testing and Materials' Standard Specification D975-81.

Disposal Well: A well through which water (usually salt water) is returned to subsurface formations.

DOE: Department of Energy

Domestic Waste: Materials discharged from sinks, showers, laundries, and galleys located within facilities addressed by this document. Included with these wastes are safety shower and eye wash stations, hand wash stations, and fish cleaning stations.

DMR: Discharge Monitoring Report.

Drill Cuttings: Particles generated by drilling into subsurface geologic formations and carried to the surface with the drilling fluid.

Drill Pipe: Special pipe designed to withstand the torsion and tension loads encountered in drilling.

Drilling Fluid: The circulating fluid (mud) used in the rotary drilling of wells to clean and condition the hole and to counterbalance formation pressure. A water-based drilling fluid is the conventional drilling fluid in which water is the continuous phase and the suspending medium for solids, whether or not oil is present. An oil-base drilling fluid has diesel, crude, or some other oil as its continuous phase with water as the dispersed phase.

Drilling Fluid System: System consisting primarily of mud storage tanks or pits, mud pumps, stand pipe, kelly hose, kelly, drill string, well annulus, mud return flowline, and solids separation equipment. The primary function of circulating the drilling fluid is to lubricate the drill bit, and to carry drill cuttings rock fragments from the bottom of the hole to the surface where they are separated out.

DWD: Deep-water development well.

DWE: Deep-water exploratory well.

Emulsion: A stable heterogenous mixture of two or more liquids (which are not normally dissolved in each other held in suspension or dispersion, one in the other, by mechanical agitation or, more frequently, by the presence of small amounts of substances known as emulsifiers. Emulsions may be oil-in-water, or water-in-oil.

Enhanced Mineral Oil-Based Drilling Fluid: A drilling fluid that has an enhanced mineral oil as its continuous phase with water as the dispersed phase. Enhanced mineral oil-based drilling fluids are a subset of non-aqueous drilling fluids.

ENR-CCI: Engineering News Record-Construction Indices.

EPA (or U.S. EPA): U.S. Environmental Protection Agency.

Exploratory Well: A well drilled either in search of an as-yet-undiscovered pool of oil or gas (a wildcat well) or to extend greatly the limits of a known pool. It involves a relatively high degree of risk. Exploratory wells may be classified as (1) wildcat, drilled in an unproven area; (2) field extension or step-out, drilled in an unproven area to extend the proved limits of a field; or (3) deep test, drilled within a field area but to unproven deeper zones.

Facility: See Produced Water Separation/Treatment Facility.

Field: A geographical area in which a number of oil or gas wells produce hydrocarbons from an underground reservoir. A field may refer to surface area only or to underground productive formations as well. A single field may have several separate reservoirs at varying depths.

Flocculation: The combination or aggregation of suspended solid particles in such a way that they form small clumps or tufts resembling wool.

Footprint: The square footage covered by various production equipment.

Formation: Various subsurface geological strata.

Formation Damage: Damage to the productivity of a well resulting from invasion of drilling fluid particles or other substances into the formation.

FR: Federal Register.

GC: Gas Chromatography.

GC/FID: Gas Chromatography with Flame Ionization Detection.

GC/MS: Gas Chromatography with Mass Spectroscopy Detection.

gph: Gallons per hour.

gpm: Gallons per minute.

hp: Horsepower.

Indirect Discharger: A facility that introduces wastewater into a publically owned treatment works.

Injection Well: A well through which fluids are injected into an underground stratum to increase reservoir pressure and to displace oil, or for disposal of produced water and other wastes.

Internal Olefin (IO): A series of isomeric forms of C_{16} and C_{18} alkenes.

kW: Kilowatt.

 LC_{50} : The concentration of a test material that is lethal to 50% of the test organisms in a bioassay.

LDEQ: Louisiana Department of Environmental Quality.

Lease: A legal document executed between a landowner, as lessor, and a company or individual as lessee, that grants the right to exploit the premises for minerals; the instrument that creates a leasehold or working interest in minerals.

Linear Alpha Olefin (LAO): A series of isomeric forms of C_{14} and C_{16} monoenes.

m: Meters.

mcf: Thousand cubic feet.

μg/l: Micrograms per liter.

mg/l: Milligrams per liter.

MDL: Minimum detection limit

MM: Million.

MMcfd: Million cubic feet per day.

MMS: Department of Interior Minerals Management Service.

MMscf: Million standard cubic feet.

Mscf: Thousand standard cubic feet.

Mud: Common term for drilling fluid.

Mud Pit: A steel or earthen tank which is part of the surface drilling fluid system.

Mud Pump: A reciprocating, high pressure pump used for circulating drilling fluid.

NO_x: Nitrogen Oxide.

NODA: Notice of Data Availability (65 FR 21559)

Non-Aqueous Drilling Fluid: A drilling fluid in which the continuous phase is a water-immiscible fluid such as an oleaginous material (e.g., mineral oil, enhanced mineral oil, paraffinic oil, or synthetic material such as olefins and vegetable esters).

Nonconventional Pollutants: Pollutants that have not been designated as either conventional pollutants or priority pollutants.

NOIA: National Ocean Industries Association.

NOW: Nonhazardous Oilfield Waste.

NPDES: National Pollutant Discharge Elimination System.

NPDES Permit: A National Pollutant Discharge Elimination System permit issued under Section 402 of the Act.

NRDC: Natural Resources Defense Council, Incorporated.

NSPS: New source performance standards under Section 306 of the Act.

NWQEI: Non-water quality environmental impact.

O&M: Operating and maintenance.

OCS: Offshore Continental Shelf.

Oil-Based Drilling Fluid (OBF): A drilling fluid that has diesel oil, mineral oil, or some other oil, but neither a synthetic material nor enhanced mineral oil, as its continuous phase with water as the dispersed phase. Oil-based drilling fluids are a subset of non-aqueous drilling fluids.

Oil-based Pill: Mineral or diesel oil injected into the mud circulation system as a slug, for the purpose of freeing stuck pipe.

Offshore Development Document: U.S. EPA, Development Document for Effluent Limitations Guidelines and New Source Performance Standards for the Offshore Subcategory of the Oil and Gas Extraction Point Source Category, Final, EPA 821-R-93-003, January 1993.

Operator: The person or company responsible for operating, maintaining, and repairing oil and gas production equipment in a field; the operator is also responsible for maintaining accurate records of the amount of oil or gas sold, and for reporting production information to state authorities.

PAH: Polynuclear Aromatic Hydrocarbon.

Poly Alpha Olefin (PAO): A mix mainly comprised of a hydrogenated decene dimer $C_{20}H_{62}$ (95%), with lesser amounts of $C_{30}H_{62}$ (4.8%) and $C_{10}H_{22}$ (0.2%).

POTW: Publicly Owned Treatment Works.

ppm: parts per million.

PPA: Pollution Prevention Act of 1990.

Priority Pollutants: The 65 pollutants and classes of pollutants declared toxic under Section 307(a) of the Act.

Produced Sand: Slurried particles used in hydraulic fracturing and the accumulated formation sands and other particles that can be generated during production. This includes desander discharge from the produced water waste stream and blowdown of the water phase from the produced water treating system.

Produced Water: Water (brine) brought up from the hydrocarbon-bearing strata with the produced oil and gas. This includes brines trapped with the oil and gas in the formation, injection water, and any chemicals added downhole or during the oil/water separation process.

Produced Water Separation/Treatment Facilities: A "facility" is any group of tanks, pits, or other apparatus that can be distinguished by location, e.g., on-site/off-site or wetland/upland and/or by disposal stream (any produced water stream that is not recombined with other produced water streams for further treatment or disposal, but is further treated and/or disposed of separately). The facility may thus be, for example, an on-site tank battery, an off-site gathering center, or a commercial disposal operation. The primary focus is on treatment produced water, not on treating oil.

Production Facility: Any fixed or mobile facility that is used for active recovery of hydrocarbons from producing formations. The production facility begins operations with the completion phase.

PSES: Pretreatment Standards for Existing Sources of indirect dischargers, under Section 307(b) of the Act.

psi: pounds per square inch.

psig: pounds per square inch gauge.

PSNS: Pretreatment Standards for New Sources of indirect dischargers, under Section 307(b) and (c) of the Act.

RCRA: Resource Conservation and Recovery Act (Pub. L. 94-580) of 1976. Amendments to Solid Waste Disposal Act.

Recompletion: When additional drilling occurs at an existing well after the initial completion of the well and drilling waste is generated.

Reservoir: Each separate, unconnected body of a producing formation.

ROC: Retention (of drilling fluids) on cuttings.

Rotary Drilling: The method of drilling wells that depends on the rotation of a column of drill pipe with a bit at the bottom. A fluid is circulated to remove the cuttings.

RPE: Reverse Phase Extraction.

RRC: Railroad Commission of Texas.

Sanitary Waste: Human body waste discharged from toilets and urinals located within facilities addressed by this document.

scf: standard cubic feet.

Shut In: To close valves on a well so that it stops producing; said of a well on which the valves are closed.

SIC: Standard Industrial Classification.

SO₂: Sulfur dioxide.

SPP: Suspended particulate phase.

SWD: Shallow-water development well.

SWE: Shallow-water exploratory well.

Synthetic-Based Drilling Fluid (SBF): A drilling fluid that has a synthetic material as its continuous phase with water as the dispersed phase. Synthetic-based drilling fluids are a subset of non-aqueous drilling fluids.

Territorial Seas: The belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of 3 miles.

THC: Total hydrocarbons.

TSP: Total suspended particulates.

TSS: Total Suspended Solids.

TWC: Treatment, workover, and completion.

UIC: Underground Injection Control.

Upland Site: A site not located in a wetland area. May be an onshore site or a coastal site under the Chapman Line definition.

U.S.C.: United States Code.

USCG: United States Coast Guard.

USDW: Underground Sources of Drinking Water.

USGS: United States Geological Survey.

Vegetable Ester: A monoester of 2-ethylhexanol and saturated fatty acids with chain lengths in the range C_8 - C_{16} .

VOC: Volatile organic carbon

Water-Based Drilling Fluid (WBF): A drilling fluid in which water or a water miscible fluid is the continuous phase and the suspending medium for solids, whether or not oil is present.

Workover: The performance of one or more of a variety of remedial operations on a producing oilwell to try to increase production. Examples of workover jobs are deepening, plugging back, pulling and resetting liners, and squeeze cementing.

APPENDIX VII-1

SBF/OBF Model Well Drilling Waste Volumes

WORKSHEET No. 22:		
Shallow Water Development Model Well Data: Discharged Cu		
BPT 10.20% Overall Cuttings Retention N		
Wastestreams from Prim. & Sec. Shakers & FRU	lbs	bbl
Total Cuttings Waste Discharged =	656,659	916.8
SBF Basefluid Discharged =	66,979	239.2
SBF Water Discharged =	28,502	81.3
SBF Barite Discharged =	47,028	31.2
Dry Drill Cuttings Discharged =	514,150	565.0
Adding formation oil to whole SBF (discharged with cuttings):		
	lbs	bbls
Whole SBF (discharged with cuttings) =	142,509	351.8
Formation Oil (discharged with cuttings) =	207	0.7
Whole SBF + Formation Oil =	142,716	352.5
SBF Basefluid Discharged + Formation Oil =	67,186	239.9
BAT/NSPS Option 1 4.03% Overall Cuttings Retention N	lumber of Discharged	Cuttings Waste
Wastestreams From Cuttings Dryer and FRU	lbs	bbl
Total Cuttings Waste Discharged =	562,370	684.0
SBF Basefluid Discharged =	22,664	80.9
SBF Water Discharged =	9,644	27.5
SBF Barite Discharged =	15,913	10.6
Dry Drill Cuttings Discharged =	514,150	565.0
Dry Drill Cuttings Discharged =	514,150	565.0
Adding formation oil to whole SBF (discharged with cuttings):		
	lbs	bbls
Whole SBF (discharged with cuttings) =	48,220	119.0
Formation Oil (discharged with cuttings) =	70	0.2
Whole SBF + Formation Oil =	48,290	119.3
SBF Basefluid Discharged + Formation Oil =	22,734	81.2
BAT/NSPS Option 2 3.82% Overall Cuttings Retention N	lumber of Discharged	Cuttings Waste
Wastestream from Cuttings Dryer (Discharged)	lbs	bbl
Total Cuttings Waste Discharged =	545,499	660.2
SBF Basefluid Discharged =	20,838	74.4
SBF Water Discharged =	8,867	25.3
SBF Barite Discharged =	14,631	9.7
Dry Drill Cuttings Discharged =	501,163	550.7
Adding formation oil to whole SBF (discharged with cuttings):		
Adding territorial to whole our fulsorial year with cuttings).	lbs	bbls
Whole SBF (discharged with cuttings) =	44,336	109.4
Formation Oil (discharged with cuttings) =	44,330 64	0.2
Whole SBF + Formation Oil =	44,401	109.7
SBF Basefluid Discharged + Formation Oil =	20,902	74.6
Wastestream from FRU (Not Discharged)	lbs	bbls
Total Cuttings Waste Not Discharged =	16,871	23.8
SBF Basefluid Not Discharged =	1,805	6.4
SBF Water Not Discharged =	768	2.2
SBF Barite Not Discharged =	1,267	0.8
Dry Drill Cuttings Not Discharged =	13,030	14.3
Adding formation oil to whole SBF (not discharged with cuttings):		
, taking to make the wild obt (not disordinged with buttings).	lbs	bbls
Whole SBF (not discharged with cuttings) =	3,841	9.5
Formation Oil (not discharged with cuttings) =	6	0.02
Whole SBF + Formation Oil (not discharged) =	3,846	9.50
SBF Basefluid Discharged + Formation Oil (not discharged) =	1,811	6.5

WORKSHEET No. 23:		
Shallow Water Exploratory Model Well Data: Discharged Cutti	ings Compostion	n Calculations
BPT 10.20% Overall Cuttings Retention Num	ber of Discharge	
Wastestreams from Prim. & Sec. Shakers & FRU	lbs	bbl
Fotal Cuttings Waste Discharged =	1,376,078	1,921.1
SBF Basefluid Discharged =	140,360	501.3
SBF Water Discharged =	59,728	170.4
SBF Barite Discharged =	98,551	65.4
Dry Drill Cuttings Discharged =	1,077,440	1184.0
Adding formation oil to whole SBF (discharged with cuttings):		
	lbs	bbls
Whole SBF (discharged with cuttings) =	298,638	737.1
Formation Oil (discharged with cuttings) =	433	1.5
Whole SBF + Formation Oil =	299,072	738.6
SBF Basefluid Discharged + Formation Oil =	140,793	502.8
BAT/NSPS Option 1 4.03% Overall Cuttings Retention Num	ber of Discharge	d Cuttings Waste
Wastestreams From Cuttings Dryer and FRU	lbs	bbl
Total Cuttings Waste Discharged =	1,178,489	1,433.4
SBF Basefluid Discharged =	47,493	169.6
SBF Water Discharged =	20,210	57.7
SBF Barite Discharged =	33,346	22.1
Dry Drill Cuttings Discharged =	1,077,440	1184.0
	1,011,110	1101.0
Adding formation oil to whole SBF (discharged with cuttings):	lbs	bbls
Whole SBF (discharged with cuttings) =	101,049	249.4
Formation Oil (discharged with cuttings) =	101,049	
		0.5
Whole SBF + Formation Oil =	101,196	249.9
SBF Basefluid Discharged + Formation Oil =	47,640	170.1
BAT/NSPS Option 2 3.82% Overall Cuttings Retention Num		
Wastestream from Cuttings Dryer (Discharged)	lbs	bbl
Total Cuttings Waste Discharged =	1,143,135	1,383.4
SBF Basefluid Discharged =	43,668	156.0
SBF Water Discharged =	18,582	53.0
SBF Barite Discharged =	30,660	20.4
Dry Drill Cuttings Discharged =	1,050,224	1154.1
Adding formation oil to whole SBF (discharged with cuttings):		
· · · · · · · · · · · · · · · · · · ·	lbs	bbls
Whole SBF (discharged with cuttings) =	92,910	229.3
Formation Oil (discharged with cuttings) =	135	0.5
Whole SBF + Formation Oil =	93,045	229.8
SBF Basefluid Discharged + Formation Oil =	43,803	156.4
Nastestream from FRU (Not Discharged)	lbs	bbls
Fotal Cuttings Waste Not Discharged =	35,355	49.9
SBF Basefluid Not Discharged =	3,783	13.5
SBF Water Not Discharged =	1,610	4.6
SBF Barite Not Discharged =	2,656	1.8
Dry Drill Cuttings Not Discharged =	27,306	30.0
Adding formation oil to whole SBF (not discharged with cuttings):		
	lbs	bbls
Whole SBF (not discharged with cuttings) =	8,049	19.9
Formation Oil (not discharged with cuttings) =	12	0.04
Whole SBF + Formation Oil (not discharged) =	8,061	19.91
SBF Basefluid Discharged + Formation Oil (not discharged) =	3,795	13.6

WORKSHEET No. 24: Deep Water Development Model Well Data: Discharged Cutting	s Compostion	Calculations
BPT 10.20% Overall Cuttings Retention Numb	er of Discharge	d Cuttings Waste
Wastestreams from Prim. & Sec. Shakers & FRU	lbs	bbl
Fotal Cuttings Waste Discharged =	993,705	1,387.3
SBF Basefluid Discharged =	101,358	362.0
SBF Water Discharged =	43,131	123.1
SBF Barite Discharged =	71,166	47.3
Dry Drill Cuttings Discharged =	778,050	855.0
ory Drill Cultings Discharged =	110,000	655.0
Adding formation oil to whole SBF (discharged with cuttings):		
	lbs	bbls
Whole SBF (discharged with cuttings) =	215,655	532.3
Formation Oil (discharged with cuttings) =	313	1.1
Whole SBF + Formation Oil =	215,968	533.4
SBF Basefluid Discharged + Formation Oil =	101,671	363.1
BAT/NSPS Option 1 4.03% Overall Cuttings Retention Numb	er of Discharged	d Cuttings Waste
Nastestreams From Cuttings Dryer and FRU	lbs	bbl
Fotal Cuttings Waste Discharged =	851,020	1,035.1
SBF Basefluid Discharged =	34,296	122.5
SBF Water Discharged =	14,594	41.6
SBF Barite Discharged =	24,080	16.0
Dry Drill Cuttings Discharged =	778,050	855.0
ory billi duttings bischarged =	770,000	000.0
Adding formation oil to whole SBF (discharged with cuttings):	II	l.b.l.
AU 1 OBE / I' 1	lbs	bbls
Whole SBF (discharged with cuttings) =	72,970	180.1
Formation Oil (discharged with cuttings) =	106	0.4
Whole SBF + Formation Oil =	73,076	180.5
SBF Basefluid Discharged + Formation Oil =	34,402	122.8
BAT/NSPS Option 2 3.82% Overall Cuttings Retention Numb	er of Discharged	d Cuttings Waste
Wastestream from Cuttings Dryer (Discharged)	lbs	bbl
Fotal Cuttings Waste Discharged =	825,490	999.0
SBF Basefluid Discharged =	31,534	112.6
SBF Water Discharged =	13,419	38.3
SBF Barite Discharged =	22,141	14.7
Ory Drill Cuttings Discharged =	758,397	833.4
Adding formation oil to whole SBF (discharged with cuttings):		
	lbs	bbls
Whole SBF (discharged with cuttings) =	67,093	165.6
Formation Oil (discharged with cuttings) =	97	0.3
Whole SBF + Formation Oil =	67,190	165.9
SBF Basefluid Discharged + Formation Oil =	31,631	113.0
Vastestream from FRU (Not Discharged)	lbs	bbls
Total Cuttings Waste Not Discharged =	25,531	36.0
	2,732	
BBF Basefluid Not Discharged =	,	9.8
SBF Water Not Discharged =	1,162	3.3
BF Barite Not Discharged =	1,918	1.3
Ory Drill Cuttings Not Discharged =	19,718	21.7
adding formation oil to whole SBF (not discharged with cuttings):		
	lbs	bbls
Vhole SBF (not discharged with cuttings) =	5,812	14.3
formation Oil (not discharged with cuttings) =	8	0.03
Vhole SBF + Formation Oil (not discharged) =	5,821	14.38
SBF Basefluid Discharged + Formation Oil (not discharged) =	2,740	9.8

WORKSHEET No. 25:		
Deep Water Exploratory Model Well Data: Discharged Cutting	s Compostion C	alculations
3PT 10.20% Overall Cuttings Retention Num	ber of Discharge	d Cuttings Waste
Wastestreams from Prim. & Sec. Shakers & FRU	lbs	bbl
Fotal Cuttings Waste Discharged =	2,209,396	3,084.5
SBF Basefluid Discharged =	225,358	804.9
SBF Water Discharged =	95,897	273.6
SBF Barite Discharged =	158,230	105.1
Dry Drill Cuttings Discharged =	1,729,910	1901.0
Adding formation oil to whole SBF (discharged with cuttings):		
	lbs	bbls
Whole SBF (discharged with cuttings) =	479,486	1183.5
Formation Oil (discharged with cuttings) =	696	2.4
Whole SBF + Formation Oil =	480,182	1185.9
SBF Basefluid Discharged + Formation Oil =	226,054	807.2
BAT/NSPS Option 1 4.03% Overall Cuttings Retention Num	ber of Discharge	d Cuttings Waste
Wastestreams From Cuttings Dryer and FRU	lbs	bbl
Total Cuttings Waste Discharged =	1,892,152	2,301.5
SBF Basefluid Discharged =	76,254	272.3
SBF Water Discharged =	32,448	92.6
SBF Barite Discharged =	53,540	35.6
Dry Drill Cuttings Discharged =	1,729,910	1901.0
bry brill Guttings bischarged –	1,729,910	1901.0
Adding formation oil to whole SBF (discharged with cuttings):	lbs	bbls
Whole CDE (discharged with cuttings)		400.5
Whole SBF (discharged with cuttings) =	162,242	
Formation Oil (discharged with cuttings) =	235	0.8
Whole SBF + Formation Oil =	162,477	401.3
SBF Basefluid Discharged + Formation Oil =	76,489	273.1
BAT/NSPS Option 2 3.82% Overall Cuttings Retention Num		
Wastestream from Cuttings Dryer (Discharged)	lbs	bbl
Total Cuttings Waste Discharged =	1,835,387	2,221.2
SBF Basefluid Discharged =	70,112	250.4
SBF Water Discharged =	29,835	85.1
SBF Barite Discharged =	49,227	32.7
Dry Drill Cuttings Discharged =	1,686,213	1853.0
Adding formation oil to whole SBF (discharged with cuttings):		
,	lbs	bbls
Whole SBF (discharged with cuttings) =	149,174	368.2
Formation Oil (discharged with cuttings) =	217	0.7
Whole SBF + Formation Oil =	149,391	368.9
SBF Basefluid Discharged + Formation Oil =	70,328	251.1
Nastestream from FRU (Not Discharged)	lbs	bbls
Total Cuttings Waste Not Discharged =	56,765	80.1
SBF Basefluid Not Discharged =	6,074	21.7
SBF Water Not Discharged =	2,585	7.4
SBF Barite Not Discharged =	4,265	2.8
Dry Drill Cuttings Not Discharged =	43,842	48.2
Adding formation oil to whole SBF (not discharged with cuttings):		
	lbs	bbls
Whole SBF (not discharged with cuttings) =	12,923	31.9
Formation Oil (not discharged with cuttings) =	19	0.06
Whole SBF + Formation Oil (not discharged) =	12,942	31.96
SBF Basefluid Discharged + Formation Oil (not discharged) =	6,093	21.8

WORKSHEET No. 26: Summary Model Well Volume Data

		Shallow Water	er (1,000 ft)			Deep Water	(>1,000 ft)	
Waste Component	Develop	ment	Explorator	ry	Developn	nent	Explorat	tory
	bbls	lbs	bbls	lbs	bbls	lbs	bbls	lbs
ВРТ								
(10.20% Cuttings Retention)								
SBF Basefluid Discharged	239.2	66,979	501.3	140,360	362.0	101,358	804.9	225,358
SBF Water Discharged	81.3	28,502	170.4	59,728	123.1	43,131	273.6	95,897
SBF Barite Discharged	31.2	47,028	65.4	98,551	47.3	71,166	105.1	158,230
Dry Drill Cuttings Discharged	565.0	514,150	1184.0	1,077,440	855.0	778,050	1901.0	1,729,910
Dry Drill Cut. + SBF Discharged	916.8	656,659	1921.1	1,376,078	1387.3	993,705	3084.5	2,209,396
SBF Discharged	351.8	142,509	737.1	298,638	532.3	215,655	1183.5	479,486
Formation Oil Discharged	0.7	207	1.5	433	1.1	313	2.4	696
Total Discharge - Water *	836	628,364	1,752	1,316,784	1265.3	950,887	2813.3	2,114,195
BAT/NSPS Option 1 (4.03% Cuttings Retention)								
SBF Basefluid Discharged	80.9	22,664	169.6	47,493	122.5	34,296	272.3	76,254
SBF Water Discharged	27.5	9,644	57.7	20,210	41.6	14,594	92.6	32,448
SBF Barite Discharged	10.6	15,913	22.1	33,346	16.0	24,080	35.6	53,540
Dry Drill Cuttings Discharged	565.0	514,150	1184.0	1,077,440	855.0	778,050	1901.0	1,729,910
Dry Drill + SBF Discharged	684.0	562,370	1433.4	1,178,489	1035.1	851,020	2301.5	1,892,152
SBF Discharged	119.0	48,220	249.4	101,049	180.1	72,970	400.5	162,242
Formation Oil Discharged	0.2	70	0.5	147	0.4	106	0.8	235
Total Discharge - Water *	657	552,796	1,376	1,158,426	993.8	836,532	2209.7	1,859,939

^{*} Used in "Regional Summary" and "NSPS Regional Summary" Worksheets

		Shallow Wat	er (1,000 ft)			Deep Water	(>1,000 ft)	
Waste Component	Develop	ment	Explorator	У	Developr	nent	Explorato	ry
·	bbls	lbs	bbls	lbs	bbls	lbs	bbls	lbs
BAT/NSPS Option 2								
(3.82% Cuttings Retention)								
Discharge Wastes								
SBF Basefluid Discharged	74.4	20,838	156.0	43,668	112.6	31,534	250.4	70,112
SBF Water Discharged	25.3	8,867	53.0	18,582	38.3	13,419	85.1	29,835
SBF Barite Discharged	9.7	14,631	20.4	30,660	14.7	22,141	32.7	49,227
Dry Drill Cuttings Discharged	550.7	501,163	1154.1	1,050,224	833.4	758,397	1853.0	1,686,213
Dry Drill + SBF Discharged	660.2	545,499	1383.4	1,143,135	999.0	825,490	2221.2	1,835,387
SBF Discharged	109.4	44,336	229.3	92,910	165.6	67,093	368.2	149,174
Formation Oil Discharged	0.2	64	0.5	135	0.3	97	0.7	217
Total Discharge - Water *	635	536,696	1,331	1,124,687	961.1	812,169	2136.8	1,805,769
Zero Discharge Wastes								
SBF Basefluid Not Discharged	6.4	1,805	13.5	3,783	9.8	2,732	21.7	6,074
SBF Water Not Discharged	2.2	768	4.6	1,610	3.3	1,162	7.4	2,585
SBF Barite Not Discharged	0.8	1,267	1.8	2,656	1.3	1,918	2.8	4,265
Dry Drill Cuttings Not Disch.	14.3	13,030	30.0	27,306	21.7	19,718	48.2	43,842
Dry Drill + SBF Not Discharged	23.8	16,871	49.9	35,355	36.0	25,531	80.1	56,765
SBF Not Discharged	9.5	3,841	19.9	8,049	14.3	5,812	31.9	12,923
Formation Oil Not Discharged	0.0	6	0.0	12	0.0	8	0.1	19

^{*} Used in "Regional Summary" and "NSPS Regional Summary" Worksheets

Total Discharge - Water *				
	SWD	SWE	DWD	DWE
Baseline	628,364	1,316,784	950,887	2,114,195
BAT 1	552,796	1,158,426	836,532	1,859,939
BAT 2	536,696	1,124,687	812,169	1,805,769
BAT 3	628,364	1,316,784	950,887	2,114,195

Summary Model Well Pollutant Data

	%	lbs	%	lbs	%	lbs	%	lbs
Priority metals (from barite)		24.7		51.8		0.0		0.0
Non-conventionals (from barite)		28,805		-		-		-
Priority organics (from SBF+oil)		1.002		0.000		0.000		0.000
Non-conventionals (from SBF+oil)		29.6		-		-		-
Priority metals	0.0856%	24.7	0.1793%	51.8	0.0000%	-	0.0000%	-
Priority organics	0.00347%	1.002	0.00000%	-	0.00000%	-	0.00000%	-
Total Priority Pollutants	0.0890%	25.7	0.1793%	51.8	0.0000%	-	0.0000%	-
Non-conventionals	99.82%	28,835	0.00%	-	0.00%	-	0.00%	-
Total		28,886		104		-		-

APPENDIX VII-2

WBF Waste Volume and Characteristics

		% Wells/region	No lube	No spot	Proj'd Tox /	Proj'd %	Proj'd %	Sum lubes
		Shallow/deep	/lube	/spot	Sheen Limit	Wells Fail	Wells Pass	spot(s), or
If of Mexico		% split	% split	% split	Failure Rate	Permit Lim	Permit Lim	that Pas
shallow	(51% GOM wells)							
shallow, no lube	(51% * 88% all wells) =	=	44.88%					
shallow, no lube, no spot		=		35.01%	1.0%	0.350%	34.66%	
shallow, no lube, + spot shallow, + lube	(44.88% * 22% all wells need spot) = (51% * 12% all wells) =		6.12%	9.87%	33.0%	3.258%	6.62%	•
shallow, + lube, no spot	(6.12% * 78% all wells do not use spot)		0.12/0	4.77%	33.0%	1.575%	3.20%	
shallow, + lube, + spot				1.35%	56.0%	0.754%	0.59%	
total % shallow wells	(0.1270 2270 dii Wollo Hood Spot)			1.0070	00.070	5.940%	45.06%	
deep	(49% GOM wells) =	= 49.00%						-
deep, OBF (no discharge)	(15% of deep wells) =				100%	7.35%	0.00%	1
deep, WBF (discharge)	(85% of deep wells) =							
deep, no lube	(49% * 88% all wells) =		36.65%					
deep, no lube, no spot	(43.12% * 78% all wells do not use spot)			28.59%	1.0%	0.286%	28.30%	
deep, no lube, + spot	(43.12% * 22% all wells need spot) =		F 000/	8.06%	33.0%	2.661%	5.40%	•
deep, + lube deep, + lube, no spot	(49% * 12% all wells) = (6.12% * 78% all wells do not use spot) =		5.00%	3.90%	33.0%	1.286%	2.61%	
deep, + lube, + spot	(6.12% * 22% all wells need spot)			1.10%	56.0%	0.616%	0.48%	
total % deep wells	(01.1270 2270 dir Hollo Hood opoly		41.65%	41.65%	00.070	12.20%	36.80%	_
								_
M								
ifornia shallow	(58% CA wells) =	= 58.00%						
shallow, no lube	(58% * 88% all wells) =	_	51.04%					
shallow, no lube, no spot	(51.04% * 78% all wells do not use spot) =			39.81%	1.0%	0.398%	39.41%	,
shallow, no lube, + spot	(51.04% * 22% all wells need spot) =			11.23%	33.0%	3.706%	7.52%	,
shallow, + lube	(58% * 12% all wells) =		6.96%					
shallow, + lube, no spot	(6.96% * 78% all wells do not use spot)	=		5.43%	33.0%	1.792%	3.64%	
shallow, + lube, + spot	(6.96% * 22% all wells need spot) =	=		1.53%	56.0%	0.857%	0.67%	
total % shallow wells deep	(42% CA wells) =	= 42.00%				6.753%	51.25%	<u>-</u>
deep, OBF (no discharge)	(15% of deep wells) =				100%	6.30%	0.00%	
deep, WBF (discharge)	(85% of deep wells) =				10070	0.0070	0.0070	
deep, no lube	(42% * 88% all wells)		31.42%					
deep, no lube, no spot	(36.96% * 78% all wells do not use spot) =	=		24.50%	1.0%	0.245%	24.26%	,
deep, no lube, + spot	(36.96% * 22% all wells need spot) =			6.91%	33.0%	2.281%	4.63%	1
deep, + lube	(42% * 12% all wells) =		4.28%					
deep, + lube, no spot		=		3.34%	33.0%	1.103%	2.24%	
deep, + lube, + spot	(3.93% * 22% all wells need spot) =	=	05.700/	0.94%	56.0%	0.528%	0.41%	_
total % deep wells			35.70%	35.70%		10.46%	31.54%	<u>-</u>
ıska								
shallow	(41% AK wells) =							
shallow, no lube	(41% * 88% all wells) =		36.08%					
shallow, no lube, no spot shallow, no lube, + spot	(36.08% * 78% all wells do not use spot) = (36.08% * 22% all wells need spot) =			28.14% 7.94%	1.0% 33.0%	0.281% 2.619%	27.86% 5.32%	
Silallow, no lube, + spot	(30.00% 22% all wells field spot)			7.5470	33.070	2.01370	3.32 /	,
shallow, + lube	(41% * 12% all wells)	_	4.92%					
shallow, + lube, no spot	(4.92% * 78% all wells do not use spot)	=		3.84%	33.0%	1.266%	2.57%	1
shallow, + lube, + spot	(4.92% * 22% all wells need spot) =	=		1.08%	56.0%	0.606%	0.48%	8.3
total % shallow wells					-	4.773%	36.23%	<u>-</u>
4	(FOO(ALC II-)	F0 000/						
deep, OBF (no discharge)	(59% AK wells) = (15% of deep wells) =				100%	8.85%	0.00%	
deep, WBF (discharge)	(85% of deep wells) =				100%	0.00%	0.00%	,
deep, no lube	(59% * 88% all wells) =		44.13%					
deep, no lube, no spot	· · · · · · · · · · · · · · · · · · ·	=		34.42%	1.0%	0.344%	34.08%	,
deep, no lube, + spot	(51.92% * 22% all wells need spot) =			9.71%	33.0%	3.204%	6.51%	
deep, + lube	(59% * 12% all wells) =		6.02%					
deep, + lube, no spot	(7.08% * 78% all wells do not use spot)			4.69%	33.0%	1.549%	3.15%	
deep, + lube, + spot	(7.08% * 22% all wells need spot) =	=		1.32%	56.0%	0.741%	0.58%	
total % deep wells			50.15%	50.15%		14.69%	44.31%	

⁽a) Percentage Distribution of Water-based Drilling Fluid Types, (no oil, +MO lube, +MO spot, or +MO lube & spot)
(b) Cells shaded in blue are data input from ODD: Table XI-10, p XI-17; other percentages shown are derived from these input values)
(c) The terms "shallow" and "deep" as used in the offshore effluent limitaiton guideline do NOT have the same meaning as the same terms as used in the synthetics effluent guideline; these terms in the offshore rule refers to the relative target depth of the well, whereas in the synthetics rule they refer to the water depth in which operations occur.

WORKSHEET No. C: POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: WELL DEPTHS AND VOLUMES OF DISCHARGED CUTTINGS AND DRILLING FLUIDS

		GOM	CA	AK	GOM	CA	AK
			Shallow Well			Deep Well	
(from ODD: Table XI-2, p XI-4)	well depth, TD	10,559	7,607	10,633	13,037	10,082	12,354
	cuttings discharged , bbl per well	1,475	1,242	1,480	2,458	1,437	2,413
(from ODD: Table XI-2, p XI-4)	drilling fluids (bbl) per well	6,938	5,939	6,963	9,752	6,777	9,458

Current Well Counts, SBF Effluent Limitations Guideline (see "Well Count Input Sheet," this file)

			EXISTING SOURCES, WBF Wells					NEW SOURCES, WBF Wells				
Est'd % WBF > SBF		GOM	CA	AK	Subtotal	GOM	CA	AK	Subtotal	Total		
Baseline	0%	857.0	5	4	866	38	0	0	38	904		
BAT 1	6%	803.0	5	4	812	35	0	0	35	847		
BAT 2	6%	803.0	5	4	812	35	0	0	35	847		

WBF/Water Phase Composition/Contribution to Toxic/Non-conventional Pollutant Loadings, Offshore Record (from ODD: Table XI-3, p XI-5 and Table XI-6, p XI-9)

	7.1	
Drilling	Composition,	Total nonC+toxics+Ba
Fuids	lbs/bbl	
barite	98	384,792 mg/kg dry
kg/bbl tox+non-Conv		17.1 kg/bbl
lb/bbl tox+non-Conv		37.7 lb/bbl
mineral oil	9	2.9 lb/bbl
TSS	153	153.0 lb/bbl

		(fromODD, p XI-6)	
Cuttings			
Density		543	lbs/bbl
Adherent mud	5.0%	040	103/001
Mud TSS	153		lb/bbl
Ad'nt mud TSS		7.7	lb/bbl
Total TSS per bbl	cuttings	551	lb/bbl

WBF/ Mineral Oil Phase Contribution to Toxic/Non-conventional Pollutant Loadings

(from ODD: Table XI-5 n XI-7)

(ITOTT ODD. Table XI	-5, p Al-7)				
MO (9 lb/bbl)	30.51 mg nonconventionals/n	nl MO:	0.14700	kg/bbl	on-conventional = 99.8%
	0.05 mg toxics/ml MO,		0.00024	kg/bbl	toxics = 0.2%
kg toxic+Non-convent	tional Pollutants per bbl MO		0.147	kg/bbl	
lbs toxic + Non-conve	entional Pollutants per bbl MO		0.324	lb/bbl	

461 : b/bbl mud 11.0 : lb/gal mud 2.1 : gal of 5% mud 23.1 : wt of 5% mud 543 : lb/bbl cuttings 566 : lb/bbl wet cuttings

APPENDIX VIII-1

Derivation of Supply Boat Transport Days

SUPPLY BOAT FREQUENCY WORKSHEET (Zero discharge)

Assumptions:

- 1. Cuttings box capacity = 25 bbl
- 2. Dedicated supply boat capacity = 80 boxes
- 3. Regularly scheduled supply boat arrives at rig every 4 days
- 4. Regularly scheduled supply boat capacity = 12 boxes
- 5. Supply boat speed = 11.5 miles per hour
- 6. Platform/rig cuttings storage capacity = 12 boxes
- 7. Total roundtrip distance for dedicated supply boat = 277 miles (Port to rig = 100 mi.; rig to disposal terminal = 117 mi.; terminal to port = 60 mi.)
- 8. Incremental mileage for regularly scheduled supply boat = 77 miles (Total roundtrip regular port to rig roundtrip = 277 200 = 77 mi.)
- 9. Supply boat maneuvering time at rig = 1hr per trip
- 10. Additional boat idling at rig due to potential delays = 1.6 hrs per trip
- 11. Supply boat in-port unloading time and demurrage = 24 hrs per trip
- 12. Truck capacity = 119 bbls
- 13. Roundtrip trucking distance from port to disposal facility = 20 miles

Deep Water Development Model Wells

Waste volume generated = 1,387.3 bbl Number of boxes of waste generated = 1387/25 = 56 boxes Number of days to drill model well = 7.9 days Number of supply boat trips = 1 dedicated trip

Number of days for supply boat:

(277 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (186.9 hrs loading) + (24 hr demurrage) = 237.59 hrs = 9.90 days

Number of truck roundtrips = 1387/119 = 12 trips Total truck miles = 12 * 20 = 240 mi.

Deep Water Exploratory Model Wells

Waste volume generated = 3,084.5 bbl

Number of boxes of waste generated = 3085/25 = 124 boxes

Number of days to drill model well = 17.5 days

Number of supply boat trips = 2 dedicated trips: 1 regularly scheduled trip

Number of days for first dedicated supply boat:

(277 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (209.1 hrs loading) + (24 hr demurrage) = 259.79 hrs = 10.82 days

Number of days for regularly scheduled supply boat:

(77 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (4 hrs loading) + (24 hr demurrage) = 37.30 hrs = 1.55 days

Number of days for second dedicated supply boat:

(277 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (199.39 hrs loading) + (24 hr demurrage) = 250.08 hrs = 10.42 days

Supply boat days = 21.24 days for dedicated + 1.55 days for regularly scheduled = 22.79 days

Number of truck roundtrips = 3084.5/119 = 26 trips Total truck miles = 26 * 20 = 520 mi.

Shallow Water Development Model Wells

Waste volume generated = 916.8 bbl

Number of boxes of waste generated = 917/25 = 37 boxes

Number of days to drill model well = 5.2 days

Number of supply boat trips = 1 dedicated trip

Number of days for supply boat:

(277 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (124.8 hrs loading) + (24 hr demurrage) = 175.49 hrs = 7.31 days

Number of truck roundtrips = 917/119 = 8 trips Total truck miles = 8 * 20 = 160 mi.

Shallow Water Exploratory Model Wells

Waste volume generated = 1,921.1 bbl

Number of boxes of waste generated = 1921/25 = 77 boxes

Number of days to drill model well = 10.9 days

Number of supply boat trips = 1 dedicated trip; 1 regularly scheduled trip

Number of days for supply boat:

(277 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (252.43 hrs loading) + (24 hr demurrage) = 303.12 hrs = 12.63 days

Number of days for regularly scheduled supply boat:

(77 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (4 hr loading) + (24 hr demurrage) = 37.30 hrs = 1.55 days

Supply boat days = 12.63 days for dedicated + 1.55 days for regularly scheduled = 14.18 days

Number of truck roundtrips = 1921/119 = 17 trips Total truck miles = 17 * 20 = 340 mi.

OFFSHORE CALIFORNIA

Assumptions:

1. Cuttings box capacity = 25 bbl

- 2. Dedicated supply boat capacity = 80 boxes
- 3. Supply boat speed = 11.5 miles per hour
- 4. Platform/rig cuttings storage capacity = 12 boxes
- 5. Total roundtrip distance for dedicated supply boat = 200 miles (Port to rig = 100 mi)
- 6. Supply boat maneuvering time at rig = 1hr per trip
- 7. Additional boat idling at rig due to potential delays = 1.6 hrs per trip
- 8. Supply boat in-port unloading time and demurrage = 24 hrs per trip
- 9. Truck capacity = 50 bbls
- 10. Roundtrip trucking distance from port to disposal facility = 300 miles

Deep Water Development Model Wells

Waste volume generated = 1,387.3 bbl Number of boxes of waste generated = 1387.3/25 = 56 boxes Number of days to drill model well = 7.9 days

Number of supply boat trips = 1 dedicated trip

Number of days for supply boat:

(200 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (186.9 hrs loading) + (24 hr demurrage) = 230.9 hrs = 9.62 days

Number of truck roundtrips = 1387.3/50 = 28 trips Total truck miles = 28 * 300 = 8400 mi.

Shallow Water Development Model Wells

Waste volume generated = 916.8 bbl Number of boxes of waste generated = 917/25 = 37 boxes Number of days to drill model well = 5.2 days Number of supply boat trips = 1 dedicated trip

Number of days for supply boat:

(200 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (122 hrs loading) + (24 hr demurrage) = 166.1 hrs = 6.92 days

Number of truck roundtrips = 917/50 = 19 trips Total truck miles = 19 * 300 = 5700 mi.

SUPPLY BOAT FREQUENCY WORKSHEET (Discharge cuttings with 3.82% SBF retention; zero discharge of fines)

GULF OF MEXICO

Assumptions:

- 1. Cuttings box capacity = 25 bbl
- 2. Dedicated supply boat capacity = 80 boxes
- 3. Regularly scheduled supply boat arrives at rig every 4 days
- 4. Regularly scheduled supply boat capacity = 12 boxes
- 5. Supply boat speed = 11.5 miles per hour
- 6. Platform/rig cuttings storage capacity = 12 boxes
- 7. Incremental mileage for regularly scheduled supply boat = 77 miles (Total roundtrip regular port to rig roundtrip = 277 200 = 77 mi.)
- 8. Supply boat maneuvering time at rig = 1hr per trip
- 9. Additional boat idling at rig due to potential delays = 1.6 hrs per trip
- 10. Supply boat in-port unloading time and demurrage = 24 hrs per trip
- 11. Truck capacity = 119 bbls
- 12. Roundtrip trucking distance from port to disposal facility = 50 miles

Deep Water Development Model Wells

Waste volume generated = 23.8 bbl

Number of boxes of waste generated = 23.8/25 = 1 box

Number of days to drill model well = 7.9 days

Number of supply boat trips = 1 regularly scheduled trip

Number of days for supply boat:

(77 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (0.1 hrs loading) + (24 hr demurrage) = 33.30 hrs = 1.40 days

Number of truck roundtrips = 23.8/119 = 1 trip

Total truck miles = 1 * 50 = 50 mi.

Deep Water Exploratory Model Wells

Waste volume generated = 49.9 bbl

Number of boxes of waste generated = 49.9/25 = 2 boxes

Number of days to drill model well = 17.5 days

Number of supply boat trips = 1 regularly scheduled trip

Number of days for regularly scheduled supply boat:

(77 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (0.2 hr loading) + (24 hr demurrage) = 33.50 hrs = 1.40 days

Number of truck roundtrips = 49.9/119 = 1 trip

Total truck miles = 1 * 50 = 50 mi.

Shallow Water Development Model Wells

Waste volume generated = 36 bbl Number of boxes of waste generated = 36/25 = 2 boxes Number of days to drill model well = 5.2 days Number of supply boat trips = 1 regularly scheduled trip

Number of days for supply boat:

(77 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (0.2 hr loading) + (24 hr demurrage) = 33.50 hrs = 1.40 days

Number of truck roundtrips = 36/119 = 1 trip Total truck miles = 1 * 50 = 50 mi.

Shallow Water Exploratory Model Wells

Waste volume generated = 80.1 bbl

Number of boxes of waste generated = 80.1/25 = 4 boxes

Number of days to drill model well = 10.9 days

Number of supply boat trips = 1 regularly scheduled trip

Number of days for regularly scheduled supply boat:

(77 mi/11.5 mi per hr) + (1 hr maneuvering) + (1.6 hrs add. idling at rig) + (0.4 hr loading) + (24 hr demurrage) = 33.70 hrs = 1.40 days

Number of truck roundtrips = 80.1/119 = 1 trip Total truck miles = 1 * 50 = 50 mi.

APPENDIX VIII-2a

Cost (Savings) Analysis Worksheets

a. Chapter VIII states:

In this Appendix, the contents of these worksheets are as follows:

- Worksheets 20 and 21 are WBF Zero Discharge baseline costs for the Gulf of Mexico and offshore California, respectively, including costs for transport and land disposal; Worksheet 22 has been deleted because land disposal is not current waste management practice in Cook Inlet, Alaska.
- Worksheets 20A through 22A are WBF Zero Discharge BAT/NSPS Option 1 and BAT/NSPS Option 2 costs for the Gulf of Mexico, offshore California, and Cook Inlet, Alaska for onsite injection, respectively.

Worksheets 20 through 22 are WBF Zero Discharge baseline costs for the Gulf of Mexico, offshore California, and Cook Inlet, Alaska, respectively, including costs for transport and land disposal and for onsite injection.

Worksheets 20A and 22A are WBF Zero Discharge BAT/NSPS Option 1 and BAT/NSPS Option 2 costs for the Gulf of Mexico (costs for transport and land disposal and for onsite injection) and for Cook Inlet, Alaska (onsite injection), respectively.

WORKSHEET A: SBF Cost Model Input Data

MODEL	WELL	WASTE	DATA
-------	------	-------	------

Waste	DWD	DWE	SWD	SWE
	BPT (Retention = 9	9.42%; Volum	es (bbl); Workshee	ets 1-3
Wet cuttings	1,387	3,085	917	1,921
DF Lost w/ Cuttings	532	1,184	352	737
	BAT 1 (Retention =3.	68%; Volumes	s (bbl); Worksheets	s 7-9
Wet cuttings	1,035	2,301	684	1,433
DF Lost w/ Cuttings	180	400	119	249
	BAT 2 (Retention =3.4	48%; Volume	s (bbl); Worksheet	s 7-9
Part A: 97% (vol) of Waste is Discharged Cuttings from Cuttings Dryer				
Wet cuttings	999	2,221	660	1,383
DF Lost w/ Cuttings	166	368	109	229
Part B: 3% (vol) of Waste is Fines Retained for Zero Discharge				
Wet cuttings	36	80	24	50
DF Lost w/ Fines	14	32	9	20
	BAT-3 (Zero Discharg	ge) Volumes (b	obl): Worksheets 1	0-12
Wet cuttings	1,387	3,085	917	1,921
DF Lost w/ Cuttings	532	1,184	352	737
	Length of SE	BF Drilling Prog	gram , in Days	
All wastes	8	18	5	11
	SBF Retention on	Cuttings, % V	Vet Weight Cutting	S
BPT (Baseline)	10.20%	10.20%	10.20%	10.20%
BAT/NSPS Option 1 (Two Discharges):	4.03%	4.03%	4.03%	4.03%
BAT/NSPS Option 2 (One Discharge):	3.82%	3.82%	3.82%	3.82%

MISCELLANEOUS COST DATA
Geographic multiplier, CA::GOM =
Geographic multiplier, AK::GOM =
ENR CCI 1999\$/1995\$ Ratio = 1.6 2.0 1.108

SUMMARY OF SUPPLY BOAT INFORMATION

(N. Orentas Memo, 2/23/00)

	BPT (CA & AK) and 2	Zero Discharge (GOI	M)			BAT Option	on 2B (ZD	Fines)
	DWD	DWE	SWD	SWE	DWD	DWE	SWD	SWE
GULF OF MEXICO OPERATIONS								
No. Supply Boat Trips								
Dedicated trips	1	2	1	1	0	0	0	0
Regularly-scheduled trip[s]	0	1	0	1	1	1	1	1
Total Trips	1	3	1	2	1	1	1	1
No. days, supply boats hauling waste ashore	9.90	22.79	7.31	14.18	9.90	22.79	7.31	14.18
CALIFORNIA OPERATIONS								
No. Supply Boat Trips								
Dedicated trips	1	NA	1	NA	0	0	0	0
Regularly-scheduled trip[s]	0	NA	0	NA	1	NA	1	NA
Total Trips	1	NA	1	NA	1	0	1	0
No. days, supply boats hauling waste ashore	9.62	NA	6.92	NA	9.62	NA	6.92	NA
LASKA (COOK INLET) OPERATIONS (No longer applicable	e)							
No. Supply Boat Trips								
Dedicated trips	NA	NA	NA	NA	NA	NA	NA	NA
Regularly-scheduled trip[s]	NA	NA	NA	NA	NA	NA	NA	NA
Total Trips	NA	NA	NA	NA	NA	NA	NA	NA
No. days, supply boats hauling waste ashore	NA	NA	NA	NA	NA	NA	NA	NA

			Zero Discharge	GOM Dis	sposal Inpu	ts		
BASELINE GULF OF MEXICO OPERATIONS			DWD	DWE	SWD	SWE		
INIT COSTS		Container Rental	\$25	\$25	\$25	\$25		
ost per bbl SBF \$221.00		Boxes per well		131	39	82		
ost per bbl OBF \$79.00								
ost per SBF Toxicity Test \$575		Days to fill & haul	9.90	22.79	7.31	14.18		
ost per day, supply boat \$8,500			23.508	23.550	23.513	23.427		
ost per day, onsite injection system \$4,280	1							
DLLUTION CONTROL SELECTION RATIOS	•							
ells currently using OBF: haul vs inject		NA	NA	NA	NA			
/ells currently using OBF: convert to SBF vs remain OBF >>>		NA	NA	NA	NA			
ASELINE CALIFORNIA OPERATIONS								
UNIT COSTS								
Disposal Cost	\$12.53	per bbl	Vendor quote:	\$35.00 pc	er ton and 9	917 lbs waste cutting	s per bbl	
Handling Cost	\$5.89	per bbl	Basis: apply F	125GOM I	nandling co	sts = 47% of total G	OM disposal costs	
Container Rental	\$40.00	per box per day	GOM vendor of	uote (\$25	per day) tir	nes geographic area	multiplier (CA:GOI)	M = 1.6)
			58	per DWD	39	per SWD		
			131	per DWE	82	oer SWE		
Supply Boat Cost		per day						
Days to fill and haul	9.62	per DWD			days per S			
Trucking Cost		per 2- box truck				mph) per 2-box truck	∢ load	
OBF Lost Drilling Fluid (w/ Cuttings) Costs	\$126	per bbl	\$79 per bbl; ir	dustry quo	ote			
ASELINE ALASKA (COOK INLET) OPERATIONS								
NIT COSTS (No longer applicable)	SWD							
Cuttings Box Purchase Cost	\$135		Operator quote	s of \$125	box in 199	5; ENR CCI ratio of	1998\$/1995\$	1.108
Capacity of Disposal Boxes			bbl per box			,		
Cost of Disposal Boxes				of \$500/bo	x in 1995; E	ENR CCI ratio of 199	98\$/1995\$ =	1.108
Supply Boat Cost	\$8,500		per day, vendo	rs				
Days rental		N .						
Trucking Cost	\$1,994		Vendor quote,	\$1,800 pe	r 22-ton (8-	box) truckload in 19	95 * ENR CCI	1.108
No. boxes per 22-ton truckload	1	3	(~8 boxes * 8	bbls/box *	704 lbs / b	bl = 45,056 lbs)		
Drilling Fluid Cost (lost with cuttings)	\$158		per bbl: from 0	OM vend	or: Geogra	phic Multiplier from (Ofshore DD =	2.0

BAT{NSPS} OPTION 1, GULF OF MEXICO OPERATIONS						
UNIT COSTS		DWD	DWE	SWD	SWE	
BAT Solids Control Equipment	\$2,400 per day, including	all equipment,	labor, and	materials;		
Drilling days (DWD; DWE; SWD; SWE)	0.4	7.9				data from industry
Cuttings dryer+FRU that reduces base fluid retention from 10.2% to 4.03%	proportion drilling	time to total op	erational ti	me (l.e., S	CE rental tir	me)
Installation and Downtime Costs: Installation	\$32,500 Installation is avg.					
: Downtime	\$24,000 downtime = \$6,00	0/hour (avg.) x	4 hrs; cost	s from Parl	ker 1999	
Drilling Fluid Costs (lost with cuttings)	\$221 per bbl SBF; cost	from vendor				
Monitoring Analyses						
Crude Contamination of Drilling Fluid @ \$50/test	\$50 Cost from vendor					
Retention of Base Fluids by Retort @ \$50/test	\$50 Retort measured of	once per discha	arge per 50	0 ft drilled;	costs from	vendor
Footage Drilled with SBF (DWD; DWE; SWD; SWE)		6,500	8,500	7,500	10,000	
BAT{NSPS} OPTION 1, CALIFORNIA OPERATIONS						_
UNIT COSTS		DWD	DWE	SWD	SWE	
BAT Solids Control Equipment	\$3,840 Includes equipme	nt, labor, & mat	terials; app	ly GOM co	sts *CA mu	Iltiplier (1.6, from offshore DD)
Drilling days (DWD; SWD)	•	7.9	17.5	5.2	10.9	data from industry
Cuttings dryer + FRU that reduces base fluid retention from 0.00% to 10.20%	0.4 proportion drilling	time to total op	erational ti	me (I.e., S	CE rental tir	ne)
Installation and Downtime Costs: Installation	\$52,000 Installation is avg.	of GOM cost r	ange; plus	geographi	ic multiplier	
: Downtime	\$38,400 downtime = \$6,00					
Drilling Fluid Costs (lost with cuttings)	\$354 per bbl SBF; GOI	M cost plus ged	graphic m	ultiplier; co	st from ven	dor
Monitoring Analyses						
Crude Contamination of Drilling Fluid @ \$50/test	\$50 Cost from vendor					
Retention of Base Fluids by Retort @ \$50/test	\$50 Retort measured of	once per discha	arge per 50	0 ft drilled;	costs from	vendor
Footage Drilled with SBF (DWD; SWD)		6,500		7,500		
BAT{NSPS} OPTION 1, ALASKA (COOK INLET) OPERATIONS						
UNIT COSTS (No longer applicable)				SWD		
BAT Solids Control Equipment	\$4 800 Includes equipme	nt labor & mai	terials: ann		sts *AK mu	Iltiplier (2.0, from offshore DD)
Drilling days (SWD)	v 1,000 melaaco eqaipme	,	ionaio, app	5.2		data from industry
Cuttings dryer + FRU that reduces base fluid retention from 0.00% to 10.20%	0.4 proportion drilling	time to total on	erational ti			
Installation and Downtime Costs: Installation	\$65,000 Installation is avg.					
: Downtime	\$48,000 downtime = \$6,00					
Drilling Fluid Costs (lost with cuttings)	\$442 per bbl SBF; GON					
Monitoring Analyses	Ţ.:= p:: 55: 65: , 66:	III. pido god	,,,p			
Crude Contamination of Drilling Fluid @ \$50/test	\$50 Cost from vendor					
Retention of Base Fluids by Retort @ \$50/test	\$50 Retort measured of	once per discha	arge per 50	0 ft drilled:	costs from	vendor
Footage Drilled with SBF (SWD)	***	,	3-1	7,500		
. 11				.,250		

BAT{NSPS} OPTION 2, GULF OF MEXICO OPERATIONS	
UNIT COSTS	DWD DWE SWD SWE
BAT Solids Control Equipment	\$2,400 per day, including all equipment, labor, and materials;
Drilling days (DWD; SWD;)	7.9 17.5 5.2 10.9 data from industry 0.4 proportion drilling time to total operational time (l.e., SCE rental time)
Cuttings dryer + FRU that reduces base fluid retention from 0.00% to 10.20% Installation and Downtime Costs: Installation	\$32,500 Installation is avg. of range;
installation and Downtime Costs: Installation : Downtime	\$32,000 Installation is avg. of range; \$24,000 downtime = \$6,000/hour (avg.) x 4 hrs; costs from Parker 1999
Zero Discharge of Fines via Hauling:	0.25 0.23 0.38 0.28
Disposal Costs @ \$10.13/bbl	10.13 See Worksheet 10
Handling Cost @ \$4.75/bbl	4.75 See Worksheet 10
Container Rental @ \$25/box/day	\$25 Orentas 2000
Number boxes	
Number days to fil and haul	2 4 2 3 9.90 22.79 7.31 14.18
Drilling Fluid Costs (lost with cuttings)	\$221 per bbl SBF; cost from vendor
Drilling Fluid Costs (lost with cuttings) Monitoring Analyses	\$221 per bbi SBF; cost from vendor
	\$50 Cost from vendor
Crude Contamination of Drilling Fluid @ \$50/test	
Retention of Base Fluids by Retort @ \$50/test	\$50 Retort measured once per discharge per 500 ft drilled; costs from vendor
Footage Drilled with SBF (DWD; DWE; SWD; SWE)	6,500 8,500 7,500 10,000
BAT{NSPS} OPTION 2, CALIFORNIA OPERATIONS	DWD SWD
BAT Solids Control Equipment	\$3,840 Includes equipment, labor, & materials; apply GOM costs *CA multiplier (1.6, from offshore DD)
Drilling days (DWD; SWD)	7.9 5.2 data from industry
Cuttings dryer + FRU that reduces base fluid retention from 0.00% to 10.20%	0.4 proportion drilling time to total operational time (I.e., SCE rental time)
Installation and Downtime Costs: Installation	\$52,000 Installation is avg. of GOM cost range; plus geographic multiplier
: Downtime	\$38,400 downtime = \$6,000/hour (avg. GOM cost: Parker, 1999 x 4 hrs; plus geographic multiplier
Zero Discharge of Fines via Hauling:	
Disposal Cost @ \$16.05/bbl	12.41 see w/s 10 Vendor quote: \$35.00 per ton and 704 lbs waste cuttings per bbl
Handling Cost @ \$7.54/bbl	5.83 see w/s 10
Container Rental @ \$40/box/day	\$40 Orentas 2000 GOM vendor quote (\$25 per day) times geographic area multiplier (CA:GOM = 1.6)
Trucking Cost @ \$354/50-bbl truckload	\$354 per 50-bbl truck load Truck rate (\$65/hr x 300 mi r.t. @55mph) per 2-box truck load
Number boxes (DWD; SWD)	3 2
Number days to fil and haul	9.62 6.92
Drilling Fluid Costs (lost with cuttings)	\$354 per bbl SBF; GOM cost plus geographic multiplier; cost from vendor
Monitoring Analyses	250.00 1/
Crude Contamination of Drilling Fluid @ \$50/test	\$50 Cost from vendor
Retention of Base Fluids by Retort @ \$50/test	\$50 Retort measured once per discharge per 500 ft drilled; costs from vendor
Footage Drilled with SBF (DWD; SWD)	6,500 7,500
BAT{NSPS} OPTION 2, ALASKA (COOK INLET) OPERATIONS	
UNIT COSTS (No longer applicable)	SWD
BAT Solids Control Equipment	\$4,800 Includes equipment, labor, & materials; apply GOM costs *AK multiplier (2.0, from offshore DD)
Drilling days (SWD)	5.2
Cuttings dryer + FRU that reduces base fluid retention from 0.00% to 10.20%	0.4 proportion drilling time to total operational time (I.e., SCE rental time)
Installation and Downtime Costs: Installation	\$65,000 Installation is avg. of GOM cost range; plus geographic multiplier
: Downtime	\$48,000 downtime = \$6,000/hour (avg. GOM cost: Parker, 1999 x 4 hrs; plus geographic multiplier
Zero Discharge of Fines via Hauling:	•
Disposal Cost	\$540
8-bbl Cuttings Box Purchase Cost @ \$135/box	\$135
Trucking Cost @ \$1,944 per 8-box truckload	\$1,994
Number boxes	39
Number days	NA NA
Drilling Fluid Costs (lost with cuttings)	\$442 per bbl SBF; GOM cost plus geographic multiplier; cost from vendor
Monitoring Analyses	
Crude Contamination of Drilling Fluid @ \$50/test	\$50 Cost from vendor
Retention of Base Fluids by Retort @ \$50/test	\$50 Retort measured once per discharge per 500 ft drilled; costs from vendor
Footage Drilled with SBF (SWD)	7,500

WORKSHEET B:	Cost Ana	ysis for O	BF and SBF
--------------	----------	------------	------------

	Diesal	Mineral				
	Oil	Oil				
	а	b	c = a+b	d = 1/c	n	n * D
x	\$70.00	\$90.00				
1/x	0.0143	0.0111	0.0254	39.3701	2	\$78.74

	Ю	V Estr	LowVisc V Estr				
	а	b	С	d = a+b+c	e = 1/d	n	n * D
x	\$160.00	\$250.00	\$300.00				
1/x	0.0063	0.0040	0.0033	0.0136	73.6196	3	\$220.86

Cost of WB-drilling fluid: \$45.00 /bbl

	BASELINE								BAT OPT 2						
	Existing Sources								Existing Sources						
H	SBF/OBF/WBF	Region	DWD	DWE	SWD	SWE			SBF/OBF/WBF	Region	DWD	DWE	SWD	SWE	-
357	WBF	Gulf of Mexico	12	36	511	298		803	WBF	Gulf of Mexico	11	34	479	279	
201	SBF	Gulf of Mexico	16	48	86	51		264	SBF	Gulf of Mexico	17	49	124	74	-
67	OBF	Gulf of Mexico	0	0	42	25	1,125	40	OBF	Gulf of Mexico	0	0	25	15	
5	WBF	Offshore California	0	0	3	2	1,120	5	WBF	Offshore California	0	0	3	2	-
0	SBF	Offshore California	0	0	0	0		3	SBF	Offshore California	0	0	0	0	+
2	OBF	Offshore California	0	0	1	1	7	2	OBF	Offshore California	0	0	1	1	1
4	WBF	Cook Inlet, Alaska	0	0	3	1		4	WBF	Cook Inlet, Alaska	0	0	3	1	
o.	SBF	Cook Inlet, Alaska	0	0	0	0		1	SBF	Cook Inlet, Alaska	0	0	1	0	1
2	OBF	Cook Inlet, Alaska	0	0	1	1	6	1	OBF	Cook Inlet, Alaska	0	0	0	1	1
	<u> </u>						1,138		<u> </u>						
	New Sources						.,		New Sources						
	SBF/OBF/WBF	Region	DWD	DWE	SWD	SWE			SBF/OBF/WBF	Region	DWD	DWE	SWD	SWE	
38	WBF	Gulf of Mexico	11	0	27	0		35	WBF	Gulf of Mexico	10	0	25	0	Т
20	SBF	Gulf of Mexico	15	0	5	0		24	SBF	Gulf of Mexico	16	0	8	0	1
2	OBF	Gulf of Mexico	0	0	2	0	60	1	OBF	Gulf of Mexico	0	0	1	0	1
0	WBF	Offshore California	0	0	0	0		0	WBF	Offshore California	0	0	0	0	
0	SBF	Offshore California	0	0	0	0		0	SBF	Offshore California	0	0	0	0	1
0	OBF	Offshore California	0	0	0	0	0	0	OBF	Offshore California	0	0	0	0	1
0	WBF	Cook Inlet, Alaska	0	0	0	0		0	WBF	Cook Inlet, Alaska	0	0	0	0	
^			_							0 1 1 1 1 1			0		
U	SBF	Cook Inlet, Alaska	0	0	0	0		0	SBF	Cook Inlet, Alaska	0	0	0	0	
	OBF Note: By definition "e.	Cook Inlet, Alaska Cook Inlet, Alaska xploratory" wells are exc	0	0	0	0	0 60	0	OBF Note: By definition "e:	Cook Inlet, Alaska Cook Inlet, Alaska xploratory" wells are exc	0	0	0	0	_
Ī	OBF Note: By definition "e.	Cook Inlet, Alaska	0	0	0	0		0	OBF Note: By definition "ex	Cook Inlet, Alaska	0	0	0	0	1
Ī	OBF Note: By definition "e. BAT OPT 1 Existing Sources	Cook Inlet, Alaska xploratory" wells are exc	0 luded from	0 the "new s	0 sources" ca	0 itegory		0	OBF Note: By definition "e: BAT OPT 3 Existing Sources	Cook Inlet, Alaska xploratory" wells are exc	0 Cluded from	0 the "new s	0 sources" ca	0 ategory]
	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF	Cook Inlet, Alaska xploratory" wells are exc Region	0 luded from	0 the "new s	0 sources" ca	0 tegory		0	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF	Cook Inlet, Alaska xploratory" wells are exc Region	0 cluded from	the "new s	0 sources" ca	0 ategory	
03	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF	Cook Inlet, Alaska xploratory" wells are exc Region Gulf of Mexico	0 luded from DWD	0 the "new s	0 cources" ca	0 ttegory SWE 279		877	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF	Cook Inlet, Alaska exploratory" wells are exc Region Gulf of Mexico	0 cluded from DWD 17	0 the "new s	0 sources" ca	0 ategory SWE 298	
603 164	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF	Cook Inlet, Alaska xploratory" wells are exc Region Gulf of Mexico Gulf of Mexico	0 luded from DWD 11 17	DWE 34 49	0 cources" ca SWD 479 124	0 ttegory SWE 279 74	60	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF	Cook Inlet, Alaska exploratory" wells are exc Region Gulf of Mexico Gulf of Mexico	DWD 17 3	DWE 51 8	0 sources" ca SWD 511 0	0 attegory SWE 298 0	
603 164	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Cook Inlet, Alaska xploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico	DWD 11 17 0	0 the "new s DWE 34 49 0	0 sources" ca SWD 479 124 25	0 ttegory SWE 279 74 15		877	OBF Note: By definition "ex BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF	Cook Inlet, Alaska exploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico	DWD 17 3 8	0 the "new s DWE 51 8 25	0 sources" ca SWD 511 0 128	0 attegory SWE 298 0 76	
03 64	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF	Cook Inlet, Alaska xploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California	0 luded from DWD 11 17 0 0	0 the "new s	0 ources" ca SWD 479 124 25 3	0 ttegory SWE 279 74 15 2	60	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF	Cook Inlet, Alaska exploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California	DWD 17 3 8 0	0 the "new s 51 8 25 0	0 sources" ca SWD 511 0 128 3	0 ategory SWE 298 0 76 2	
603 164	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF SBF	Cook Inlet, Alaska xploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California	0 luded from DWD 11 17 0 0	0 the "new s DWE 34 49 0	0 ources" ca SWD 479 124 25 3 0	0 ttegory SWE 279 74 15 2 0	1,107	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF SBF	Cook Inlet, Alaska exploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California	0 cluded from 17 3 8 0	0 the "new s DWE 51 8 25 0	0 sources" ca SWD 511 0 128 3 0	0 ategory SWE 298 0 76 2 0	
603 164	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF OBF	Cook Inlet, Alaska xploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California	0 luded from DWD 11 17 0 0 0 0	0 the "new s DWE 34 49 0 0 0	0 cources" ca SWD 479 124 25 3 0 1	0 ttegory SWE 279 74 15 2 0 1	60	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF	Cook Inlet, Alaska xploratory" wells are exc Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California	0 cluded from 17 3 8 0 0 0	0 the "new s	0 sources" ca SWD 511 0 128 3 0 1	0 ategory SWE 298 0 76 2 0 1	
303 264	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF WBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska	0 luded from DWD 11 17 0 0 0 0	0 the "new s DWE 34 49 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1	0 ttegory SWE 279 74 15 2 0 1	1,107	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF WBF SBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska	0 cluded from 17 3 8 0 0 0 0	0 the "new s DWE 51 8 25 0 0 0	0 sources" ca SWD 511 0 128 3 0 1	0 ategory SWE 298 0 76 2 0 1	
03 64	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF OBF WBF SBF OBF WBF SBF OBF SBF OBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska	0 luded from DWD 11 17 0 0 0 0 0	0 the "new s DWE 34 49 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1	0 ttegory SWE 279 74 15 2 0 1 1 0	1,107	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF OBF WBF SBF OBF WBF SBF OBF SBF OBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska	0 cluded from DWD 17 3 8 0 0 0 0 0 0	0 the "new s DWE 51 8 25 0 0 0 0 0	0 sources" ca SWD 511 0 128 3 0 1 3 0	0 ategory SWE 298 0 76 2 0 1 1 0	
303 264	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF WBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska	0 luded from DWD 11 17 0 0 0 0	0 the "new s DWE 34 49 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1	0 ttegory SWE 279 74 15 2 0 1	1,107 7	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF WBF SBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska	0 cluded from 17 3 8 0 0 0 0	0 the "new s DWE 51 8 25 0 0 0	0 sources" ca SWD 511 0 128 3 0 1	0 ategory SWE 298 0 76 2 0 1	
Ī	OBF Note: By definition "e: BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF WBF SBF OBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska	0 luded from DWD 11 17 0 0 0 0 0	0 the "new s DWE 34 49 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1	0 ttegory SWE 279 74 15 2 0 1 1 0	1,107	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF WBF SBF OBF OBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska	0 cluded from DWD 17 3 8 0 0 0 0 0 0	0 the "new s DWE 51 8 25 0 0 0 0 0	0 sources" ca SWD 511 0 128 3 0 1 3 0	0 ategory SWE 298 0 76 2 0 1 1 0	
603 164	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF OBF WBF SBF OBF WBF SBF OBF SBF OBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska	0 luded from DWD 11 17 0 0 0 0 0	0 the "new s DWE 34 49 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1	0 ttegory SWE 279 74 15 2 0 1 1 0	1,107 7	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF OBF WBF SBF OBF WBF SBF OBF SBF OBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska	0 cluded from DWD 17 3 8 0 0 0 0 0 0	0 the "new s DWE 51 8 25 0 0 0 0 0	0 sources" ca SWD 511 0 128 3 0 1 3 0	0 ategory SWE 298 0 76 2 0 1 1 0	
5 0 2 4 1 1	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Region	0 luded from DWD 11 17 0 0 0 0 0 0 DWD DWD	0 the "new s DWE 34 49 0 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1 0 SWD	0 ttegory SWE 279 74 15 2 0 1 1 1 0 1	1,107 7	877 11 237 5 0 2 4 0 2	OBF Note: By definition "ex BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Region	0 cluded from 17 3 8 0 0 0 0 0 0 0 DWD	0 the "new s DWE 51 8 25 0 0 0 0 0 0	0 sources" ca SWD 511 0 128 3 0 1 3 0 1 SWD	0 ategory SWE 298 0 76 2 0 1 1 1 0 SWE	
303 264	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Gulf of Mexico Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Gulf of Mexico	0 luded from DWD 11 17 0 0 0 0 0 0 DWD 10	0 the "new s DWE 34 49 0 0 0 0 0 0 DWE	0 sources" ca SWD 479 124 25 3 0 1 3 1 0 SWD 25	0 ttegory SWE 279 74 15 2 0 1 1 0 1 SWE	1,107 7	877 11	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF OBF WBF SBF OBF WBF SBF OBF WBF SBF WBF SBF OBF WBF SBF WBF SBF WBF SBF WBF SBF WBF WBF WBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska	0 cluded from 17 3 8 0 0 0 0 0 0 0 DWD	0 the "new s DWE 51 8 25 0 0 0 0 0 0 DWE	0 sources" ca SWD 511 0 128 3 0 1 3	0 ategory SWE 298 0 76 2 0 1 1 0 1 SWE	
503 644 40 5 0 2 4 1 1	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico	0 luded from DWD 11 17 0 0 0 0 0 0 DWD 10 16	0 the "new s DWE 34 49 0 0 0 0 0 0 DWE	0 sources" ca SWD 479 124 25 3 0 1 3 1 0 SWD	0 ttegory SWE 279 74 15 2 0 1 1 0 1 SWE 0 0 0	1,107 7 6 1,120	877 11 237 5 0 2 4 0 2	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF SBF SBF SBF SBF SBF SBF SBF SBF S	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico	0 cluded from 17 3 8 0 0 0 0 0 0 0 0 0 15 3	0 the "new s 51 8 25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 511 0 128 3 0 1 1 SWD 27	0 ategory SWE 298 0 76 2 0 1 1 1 0 SWE	
35 363 264 40 5 0 2 4 1 1	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico	0 luded from DWD 11 17 0 0 0 0 0 0 10 10 16 0	0 the "new s DWE 34 49 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1 0 SWD 25 8 1	0 ttegory SWE 279 74 15 2 0 1 1 1 0 1 SWE 0 0 0 0	1,107 7	877 11 237 5 0 2 4 0 2	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF OBF WBF SBF OBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Gulf of Mexico Offshore California Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Offshore Gulf of Mexico Gulf of Mexico Gulf of Mexico	0 cluded from 17 3 8 0 0 0 0 0 0 0 0 0 15 3 8	0 the "new s 51 8 25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 511 0 128 3 0 1 3 0 1 SWD 27 0	0 ategory SWE 298 0 76 2 0 1 1 1 0 1 SWE 0 0 0 0	
503 644 40 5 0 2 4 1 1	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF New Sources SBF/OBF/WBF WBF SBF OBF WBF New Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Offshore California	0 luded from DWD 11 17 0 0 0 0 0 0 10 10 16 0 0 0	0 the "new s DWE 34 49 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1 0 SWD 25 8 1	0 ttegory SWE 279 74 15 2 0 1 1 1 0 1 SWE 0 0 0 0	1,107 7 6 1,120	877 11 237 5 0 2 4 0 2	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF OBF WBF SBF OBF WBF WBF SBF OBF WBF WBF WBF WBF	Region Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Maska Gulf of Mexico Offshore California	0 cluded from DWD 17 3 8 0 0 0 0 DWD 15 3 8 0 0 0 0 0 0 0 0 0 0 0 0	0 the "new s DWE 51 8 25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SWD 511 0 128 3 0 1 1 SWD 27 0 7 0 0	0 ategory SWE 298 0 76 2 0 1 1 1 0 1 SWE 0 0 0 0 0	
503 644 40 5 0 2 4 1 1	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Offshore California Cook Inlet, Alaska Region Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Offshore California Offshore California	0 luded from DWD 11 17 0 0 0 0 0 0 10 10 16 0	0 the "new s DWE 34 49 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1 0 SWD 25 8 1	0 tegory SWE 279 74 15 2 0 1 1 1 0 1 SWE 0 0 0 0 0 0	1,107 7 6 1,120	877 11 237 5 0 2 4 0 2	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF OBF WBF SBF OBF	Region Gulf of Mexico Offshore California Cook Inlet, Alaska Cook Inlet, Mexico Gulf of Mexico Gulf of Mexico Offshore California Cook Inlet, Alaska	0 cluded from DWD 17 3 8 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 the "new s 51 8 25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 511 0 128 3 0 1 3 0 1 SWD 27 0 7	0 ategory SWE 298 0 76 2 0 1 1 1 0 1 SWE 0 0 0 0	
35 363 264 40 5 0 2 4 1 1	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Offshore California Cook Inlet, Alaska Region Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska	0 luded from DWD 11 17 0 0 0 0 0 0 0 0 0	0 the "new s DWE 34 49 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 0 SWD 25 8 1 0 0 0 0	0 ttegory SWE 279 74 15 2 0 1 1 1 0 1 SWE 0 0 0 0 0 0 0	1,107 7 6 1,120	877 11 237 5 0 2 4 0 2	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Offshore California Cook Inlet, Alaska Cook Inlet, Mexico Gulf of Mexico Gulf of Mexico Gulf of Mexico Cook Inlet, Cook Inlet, Alaska	0 cluded from 17 3 8 8 0 0 0 0 0 15 3 8 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 the "new s DWE 51 8 25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SWD 511 0 128 3 0 1 1 SWD 1 1	0 ategory SWE 298 0 76 2 0 1 1 1 0 1 SWE 0 0 0 0 0 0	
503 644 40 5 0 2 4 1 1	OBF Note: By definition "e. BAT OPT 1 Existing Sources SBF/OBF/WBF WBF SBF OBF	Region Gulf of Mexico Offshore California Cook Inlet, Alaska Region Gulf of Mexico Gulf of Mexico Offshore California Offshore California Cook Inlet, Alaska Cook Inlet, Alaska Cook Inlet, Alaska Gulf of Mexico Offshore California Offshore California	0 luded from DWD 11 17 0 0 0 0 0 0 0 0 0	0 the "new s DWE 34 49 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 sources" ca SWD 479 124 25 3 0 1 3 1 0 SWD 25 8 1 0 0 0	0 tegory SWE 279 74 15 2 0 1 1 1 0 1 SWE 0 0 0 0 0 0	1,107 7 6 1,120	877 11 237 5 0 2 4 0 2 43 15 0 0 0	OBF Note: By definition "e: BAT OPT 3 Existing Sources SBF/OBF/WBF WBF SBF OBF WBF SBF SBF SBF SBF OBF	Region Gulf of Mexico Offshore California Cook Inlet, Alaska Cook Inlet, Mexico Gulf of Mexico Gulf of Mexico Offshore California Cook Inlet, Alaska	0 cluded from DWD 17 3 8 8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 the "new s DWE	SWD 511 0 0 1 1 1 1 1 1 1	0 ategory SWE 298 0 76 2 0 1 1 1 0 1 SWE 0 0 0 0 0 0	

Worksheet No. 1 Compliance Cost Estimates (\$1999): Baseline Current Practice (BPT) Existing Sources; Gulf of Mexico

Technologies:	Discharge SBF cuttings via primary, secondary shakers & FRU; fractional SBF retention (wt:wt) determined as 10.2%				
	Zero discharge of OBF cuttings via haul & land-disposal or on-site grinding and injection				
Model Well Types:	Four types: Deep- and Shallow-water, Development and Exploratory				
Per-Well Waste Volumes:					
Deep-water Development:	1,387 bbls waste SBF/OBF-cuttings (0.2% crude contamination)				
	532 bbls SBF/OBF lost with cuttings				
Deep-water Exploratory:	3,085 bbls waste SBF/OBF-cuttings (0.2% crude contamination)				
	1,184 bbls SBF/OBF lost with cuttings				
Shallow-water Development:	917 bbls waste SBF/OBF-cuttings (0.2% crude contamination)				
	352 bbls SBF/OBF lost with cuttings				
Shallow-water Exploratory:	1,921 bbls waste SBF/OBF-cuttings (0.2% crude contamination)				
	737 bbls SBF/OBF lost with cuttings				

Cost Item	DWD	DWE	SWD	SWE	SWD	SWE	TOTAL
SBF & OBF Discharge Costs							
Drilling Fluid Costs,							
Wells Currently Using SBF							
SBF: (SBF@ \$221/bbl)	\$117,572	\$261,664	\$77,792	\$162,877			
OBF Cost/Well : Haul and Dispose					\$110,715	\$236,406	
OBF: Well: Grind and Inject					\$83,448	\$174,853	
OBF. Well. Gillia and inject					Ф03,440	φ174,655	
				•	.		
Baseline Cost (\$/well)	\$117,572	\$261,664	\$77,792	\$162,877	\$105,262	\$224,096	
Unit Cost (\$/bbl)	\$85	\$85	\$85	\$85	\$115	\$117	
No. wells	16	48	86	51	42	25	
No. Wells Discharge (OBF: haul)	16	48	86	51	34	20	
No. wells (OBF: inject)					8	5	
TOTAL ANNUAL (\$)	`						
BASELINE GOM COST (\$)	\$1,881,152	##########	\$6,690,112	\$8,306,727	\$4,431,901	\$5,602,395	\$39,472,159
	Subtotal for SBF Wells: \$29,437,863						
	Subtotal for OBF Wells: \$10,034,296						

UNIT COSTS

SBF @ \$221 \$/bbl lost w/ cuttings

SedTox Monitoring Test \$575 \$/test, once per well

WBF Upper Bound (10.73%) Analysis for Zero Discharge Wells (fail tox/sheen)

	Deep-Wat	er Using WBF	Shallow-W	ater Using WBF	
	Development	Exploratory	Development	Exploratory	
WBF haul, \$/well	\$906,022	\$2,724,495	\$627,810	\$1,429,659	
WBF inject, \$/well	\$543,102	\$1,235,566	\$387,454	\$768,992	
No. WBF wells	12	36	511	298	
% WBF fail sheen /tox (a)	10.73%	10.73%	10.73%	10.73%	
No wells fail sheen/tox	1	4	55	32	
No. haul	1	4	44	26	
No. inject			11	6	
No. discharge	11	32	456	266	
\$ haul	\$906,022	\$10,897,980	27,623,640	37,171,134	\$76,598,776
\$ inject			\$4,261,994	\$4,613,951	\$8,875,945
Total \$	\$906,022	\$10,897,980	\$31,885,634	\$41,785,085	\$85,474,721
(a) Per ODD					

Worksheet No. 2

Compliance Cost Estimates (1999\$): Baseline Current Practice (BPT) Existing Sources; California (NOTE: Costs no longer applicable to SBF reg analysis since no conversions to SBF are projected)

Technology:		, , , , , , , , , , , , , , , , , , ,	ind-Disnose			
Fechnology: Zero-Discharge via Haul and Land-Dispose Model Well Types: Deep- and Shallow-water Development Wells						
Per-Well Waste Volumes:	•					
Deep-water Devel:				crude contamination)		
Deep-water Explor:		bbls OBF lost w		crudo contamination)		
Deep-water Exploi.		3,085 bbls waste OBF-cuttings (0.2% crude contaminat1,184 bbls OBF lost with cuttings				
Shallow-water Devel:	917	bbls waste OBF	-cuttings (0.2%	crude contamination)		
	352	bbls OBF lost w	ith cuttinas			
Shallow-water Explor.:	1,921	bbls waste OBF	-cuttings (0.2%	crude contamination)		
	737	bbls OBF lost w	ith cuttings			
Cost Item	SWD	SWE	TOTAL			
Cost North	0112	OWE	TOTAL			
OBF Haul & Land Dispose						
Disposal Cost (\$12.53/bbl)	\$11,490	\$24,070				
	\$ = 404	044.045				
Handling Cost (\$5.89/bbl)	\$5,401	\$11,315				
Container Rental	\$15,007	\$22,698				
(\$40/box/day * "x" boxes* "y" days to fill & haul)	φ10,007	Ψ22,030				
Supply Boat Cost (\$8,500/day)	\$81,770	\$58,820				
Trucking Cost (\$354/truck load)	\$7,091	\$14,536				
Drilling Fluid Costs	\$44,352	\$92,862				
(OBF lost with cuttings @ \$79/bbl)	ψ11,002	ψ02,002				
TOTAL OBF Cost / Model Well, Haul/Land Dispose	\$165,111	\$224,301				
Unit Cost (\$/bbl) No. Wells		\$117 0				
TOTAL CA OBF HAUL/LAND DISPOSAL COST (\$)	0 \$0	\$0	\$0			
UNIT COSTS	40	+ + + + + + + + + + + + + + + + + + +	40			
Disposal Cost	\$12.53	per bbl				
Handling Cost	\$5.89	per bbl				
Container Rental	\$40	per box per day				
Boxes per well	39	82				
Days to fill & haul	9.62	6.92				
Trucking Cost Supply Boat Cost	\$355	- box truck load per day				
Days to fill & haul	9.62	6.92				
OBF Lost Drilling Fluid (w/ Cuttings) Costs	\$126	per bbl				
3	•					
OBF Grind & Inject Disposal:						
Onsite Injection System @ \$4280/day	\$89,024	\$186,608				
x rental days x CA geographic multiplier						
Drilling Fluid Costs	¢44.402	¢02.457				
Drining Fluid Costs	\$44,493	\$93,157				
TOTAL CA OBF Cost per Model Well, Grind & Inject (\$)	\$133,517	\$279,765				
Unit Cost (\$/bbl)	\$146	\$146				
No. Wells	1	1				
	4400 545	40-0-0-	4440.000			
TOTAL CA OBF & GRIND & INJECT COST (\$) Unit Costs	\$133,517	\$279,765	\$413,282			
Drilling days	5.2	10.9				
Drilling days :Operating Days	0.4	0.4				
Rental Days	13.0	27.3				
Geographic multiplier	1.6	1.6				
· · · · · · · · · · · · · · · · · · ·						
OBF Drilling Fluid	\$79.00	\$79.00				

Worksheet No. 3

Compliance Cost Estimates (1999\$): Baseline Current Practice (BPT) Existing Sources; Cook Inlet, Alaska

Technology: Zero-Discharge via Haul and Land-Dispose
Model Well Types: Shallow Water Development Wells

Model Well Types:	Shallow-Water Development W		/ells	
Per-Well Waste Volumes:	SWD	SWE		
	917	1,921	bbls waste OBF-cuttings (0.2% crude	contamination)
	352	737	bbls OBF lost with cuttings	,
Cost Item	SWD	SWE		
OBF Onsite Injection Costs			Drilling days, SWD: SWE:	
,	1		5.2	10.9
Onsite Injection System @ \$8560/day (drilling days = 40% of time on rig, thus	\$111,280	\$233,260	Drilling days: Days-to-Drill Fraction: Days-to-Drill:	0.4
rental days = 2.5 x drilling days)			13.0	27.3
			Injection unit cost from GOM vendor Geographic Multiplier, Offshore DD AK injection unit cost, \$/day)	\$4,280 2 \$8,560
Drilling Fluid Cost	\$55,616	\$116,446	, , , , , , , , , , , , , , , , , , , ,	
(OBF lost with cuttings @ \$158/bbl)			Cost OBF (\$/bbl), GOM;	\$79.00
			Geographic Multiplier, Offshore DD	2
Total Cost per Model Well (\$)	\$166,896	\$349,706	AK OBF cost, \$/bbl)	\$158.00
Total Cost μει Model Well (ψ)	ψ100,090	ψ549,700		
Unit Cost (\$/bbl)	\$182	\$381		
No. Wells	1	1		
Total OBF Costs per Well Type, Cook Inlet (\$)		\$349,706	Per-well costs x 1 shallow-water develo	pment wells
Total Annual Baseline OBF Cook Inlet COST (\$)		\$516,602		
SBF Onsite Injection Costs]
Onsite Injection System @ \$8560/day	\$111,280	\$233,260		
Drilling Fluid Cost (SBF lost with cuttings @ \$442/bbl)	\$155,584	\$325,754	Cost from GOM vendor; Geographic Multiplier from Offshore DD	221 2
Total Cost per Well	\$266,864	\$559,014		442

Worksheet No. 4 Compliance Cost Estimates (1999\$): Cuttings Dryer & FRU Discharge (BAT/NSPS Option 1) Existing Sources; Gulf of Mexico

Technology:		an add-on drill cutting base fluid on cuttings	gs "dryer" and a fines i	emoval unit with an av	erage fractional	
Model Well Types:			(wt:wt) = Development and Explo			
Per-Well Waste Volumes:	rountypoon Boop	and Orianon Water, D	отогориноти ала Ехри	oratory .		
Deep-water Development:			0.2% crude contamina	ation)		
Deep-water Exploratory:		bbls SBF/OBF lost w bbls waste cuttings (ith cuttings 0.2% crude contamina	ation)		
	400	bbls SBF/OBF lost w	ith cuttings	•		
Shallow-water Development:			0.2% crude contamina	ation)		
Shallow-water Exploratory:		bbls SBF/OBF lost w bbls waste cuttings (nin cullings 0.2% crude contamina	ation)		
, , , , , , , , , , , , , , , , , , , ,		bbls SBF/OBF lost w		,		
Cost Item	DWD	DWE	SWD	SWE	TOTAL	
GOM Wells Projected to Use SBF (Current SBF plus 6%	WRF & 40% ORF	Wells Convert) and	Discharging All Cut	tings		
BAT Solids Control Equipment @ \$2400/day x rental days	\$47,400	\$105,000	\$31,200	\$65,400	\$249,000	Includes all equipment, labor, and materials;
Cuttings dryer + fines removal unit		, ,,,,,,	, , , , ,	****		days of rental from industry
Installation and Downtime Costs	\$56,500	\$56,500	\$56,500	\$56,500	\$226,000	Installation costs (\$32,500) plus
(\$32,500 inst + \$24,000 dt)	ψ30,300	ψ50,500	ψ30,300	ψ30,300	Ψ220,000	\$6,000/hour (avg; Parker, 1999) x 4 hrs
Drilling Fluid Costs	\$39,780	\$88,400	\$26,299	\$55,029	\$209,508	Cost from vendor
(SBF lost with cuttings @ \$180/bbl)						
Monitoring Analyses						
Crude Contamination of Drilling Fluid @ \$50/test Retention of Base Fluids by Retort @ \$50/test	\$50 \$1,300	\$50 \$1,700	\$50 \$1,500	\$50 \$2,000	\$200 \$6,500	Cost from vendor Retort run once/discharge/500 ft drilled;
SedTox Monitoring Test	\$575	\$575	\$575	\$575	ψ0,500	one commingled discharge; cost from vendor
Unadjusted Cost Per Well (\$)	\$145,605	\$252,225	\$116,124	\$179,554		
Unit Cost (\$/bbl)	\$141	\$110	\$170	\$125		
O O Sat (4: 22.)	****	*****	****	*		
No. SBF wells + WBF>SBF wells + OBF > SBF wells	17	49	124	74	264	
Total Annual GOM Cost for SBF Wells (\$)	\$2,475,285	\$12,359,025	\$14.399.376	¢12 206 006	\$42,520,682	
Total Affilial GOM Cost for SBF Wells (\$)	\$2,475,265	\$12,359,025	\$14,399,376	\$13,286,996	\$42,520,662	
Installation/Downtime Well / Structure Adj't Factor	2.2	1.6	2.2	1.6		
	(*	(2)	(0	(2)		
Installation/Downtime Well per Structure Total Cost Adjustment	(\$523,909)	(\$1,038,188)	(\$3,821,455)	(\$1,567,875)	(\$6,951,426)	
Total Cost Aujustment						
Total Adj'd Annual GOM Cost, SBF Wells	\$1,951,376	\$11,320,838	\$10,577,921	\$11,719,121	\$35,569,256	
A AU . 17.10	A 444 T 0 T	****	405.000	4450.007		
Avg Adjusted Total Cost per well type GOM Wells Retaining Use of OBF (0% Conversion)	\$114,787	\$231,038	\$85,306	\$158,367		
COM Wells Retaining Use of Obi (U/A Conversion)						
Cost/Well: Haul and Dispose			\$110,715	\$236,406		
0			000 110	0.17.1 0.50		
Cost/Well: Grind and Inject			\$83,448	\$174,853		
Weighted (80:20, haul:inject)Average Cost Per Well (\$)			\$105,262	\$224,096	\$329,358	
Unit Cost (\$/bbl)			\$115	\$117		
No. Wells			25	15		
No. Wells haul			20	12 3		
No. Wells inject TOT ANNUAL GOM COST (OBF Wells; \$)			5 2,631,544	3,361,437	5,992,981	
TOT Annual GOM Cost for SBF Improved Solids Control	l (\$)		, ,	,,	35,569,256	1
TOT Annual GOM Cost , SBF+OBF Wells					41,562,237	
UNIT COSTS						1
Drilling days (DWD; DWE; SWD; SWE) Proportion drilling time to operational (rental) time	7.90 0.40		5.20	10.90		1
BAT Solids Control Equipment (cuttings dryer+FRU)			uipment, labor, and ma	aterials;		
Installation and Downtime Costs: Installation	\$32,500	Installation is avg. of	range;			
: Downtime			nour (avg.) x 4 hrs; co	sts from Parker 1999		
Drilling Fluid Costs (lost with cuttings) Monitoring Analyses	\$221	per bbl SBF; cost fro	om vendor			
Footage Drilled with SBF (DWD; DWE; SWD; SWE)	6,500	8,500	7,500	10,000		
Retention of Base Fluids by Retort @ \$50/test Crude Contamination of Drilling Fluid @ \$50/test		Retort measured one Cost from vendor	ce per discharge per 5	ouu tt drilled; costs froi	n vendor	
SedTox Monitoring Test 575						
* FRU: fines removal unit (i.e., decanting centrifuge or mud						

Worksheet No. 4-A						
WBF Upper Bound (10.73%) Anal	ysis for Zero	Discharge We	lls			
Existing Sources; Gulf of Mexico	,					
(Costs incurred only if WBF wells are pr	ojected to fail th	eir toxicity or sh	een limits)			
BAT 1 & 2						
WBF ANALYSIS:	DWD	DWE	SWD	SWE		
(WBF > SBF Wells Only, projected WBF Costs)						
haul	\$906,022	\$2,724,495	\$627,810	\$1,429,659	(see worksheet 20 for	per well cost detail)
inject	\$543,102	\$1,235,566	\$387,454	\$768,992	(see worksheet 20A f	or per well cost detail)
Total No. WBF>SBF Wells	1	2	32	19		
% Fail sheen/tox	10.73%	10.73%	10.73%	10.73%		
No. Wells Fail sheen/tox	0	0	3	2		
No. haul	0	0	2	2		
No. inject			1	0		
Cost to haul	\$0	\$0	\$1,255,620	\$2,859,318	\$4,114,938	
Cost to inject	\$0	\$0	\$387,454	\$0	\$387,454	
Total WBF> SBF Haul+Inject Costs	\$0	\$0	\$1,643,074	\$2,859,318	\$4,502,392	
BAT 1 & 2	DWD	DWE	SWD	SWE	I	
WBF ANALYSIS:	5.1.5	5112	0.1.5	0112		
(Remaining WBF Wells)						
WBF haul, \$/well	\$906,022	\$2,724,495	\$627,810	\$1,429,659		
WBF inject, \$/well	\$543,102	\$1,235,566	\$387,454	\$768,992		
No. WBF wells	11	34	479	279		
% WBF fail sheen /tox (a) No wells fail sheen/tox	10.73% 1	10.73% 4	10.73% 51	10.73% 30		
No. haul	1	4	41	24		
No. inject			10	6		
\$ haul	\$906,022	\$10,897,980	25,740,210	34,311,816	\$71,856,028	
\$ inject			\$3,874,540	\$4,613,951	\$8,488,491	
Total \$ (a) Per ODD	\$906,022	\$10,897,980	\$29,614,750	\$38,925,767	\$80,344,519	\$84,846,911
Installation/Downtime Adjusted BAT 1	SBF Well Costs					\$04,040,911
		DWD	DWE	SWD	SWE	Totals
Total Annnual GOM Disposal Cost	or SBF Wells (\$)	\$2,475,285	\$12,359,025	\$14,399,376	\$13,286,996	\$42,520,682
	No. Wells	17	49	124	74	264
Average 0	Cost per well type	\$145,605	\$252,225	\$116,124	\$179,554	\$161,063
Installation/Downtime Well/Struc		(\$523,909)	(\$1,038,188)	(\$3,821,455)	(\$1,567,875)	(\$6,951,426)
TOTAL ADJ 'D ANNUAL GOM Co	-	\$1,951,376	\$11,320,838	\$10,577,921	\$11,719,121	\$35,569,256
Average Adjusted Total (114,787	231,038	85,306	158,367	, ,

\$134,732

Worksheet No. 5 (see Baseline CA sheet (W/Ss 2 & 2-A) for SBF/OBF cost projections, all options)

Compliance Cost Estimates (1999\$): Discharge from Cuttings Dryer/FRUs (BAT/NSPS Option 1) Existing Sources, California (Costs no longer applicable; 0% conversion to SBF projected)

Technology: Discharge via both an add-on drill cuttings "dryer" and a fines removal unit with an average fractional

retention of base fluid on cuttings (weight:weight) = 4.03%

Model Well Types: Deep- and Shallow-Water Development Wells

Shallow-water Explor.:

Per-Well Waste Volumes:

1,433 bbls waste SBF-cuttings (0.2% crude contamination)

249 bbls SBF lost with cuttings

Shallow-water Development: 684 bbls waste SBF-cuttings (0.2% crude contamination)

119 bbls SBF lost with cuttings

119 bbls SBF lost with cuttings						
Cost Item	SWD	SWE	TOTAL			
CDE Disabassa						
SBF Discharge SBF Cost Estimate						
	¢75 040	£40.000		Includes all aguinment labor, and materials. Coographic Area		
BAT Solids Control Equipment @ \$3840/day x rental days Cuttings dryer + fines removal unit	\$75,840	\$48,960		Includes all equipment, labor, and materials; Geographic Area Cost Multiplier (1.6) from Offshore DD; rental days from industry data		
Cuttings dryer + lines removal unit				Cost Multiplier (1.6) from Offshore DD, reflial days from fridustry data		
Installation and Downtime Costs	\$90,400	\$90,400		Installation is avg. of range; downtime is \$6,000/hour (avg) x		
(\$52,000 inst + \$38,400 dt)	φου, ισσ	ψου, .σσ		1.6 (area multiplier) x 4 hours; costs from Parker 1999		
(+,				(
Drilling Fluid Costs	\$88,146	\$42,126		Cost from vendor; Geographic Multiplier from Offshore DD		
(SBF lost with cuttings @ \$354/bbl)	, ,	. ,		, , ,		
Monitoring Analyses						
Crude Contamination of Drilling Fluid @ \$50/test	\$50	\$50		Cost from vendor		
Retention of Base Fluids by Retort @ \$50/test	\$1,300	\$1,500		Retort measured once per discharge per 500 ft drilled;		
SedTox Monitoring Test	\$575	\$575		two discharge points; cost from vendor		
TOTAL Cost Per Well (\$)	\$256,311	\$183,611				
Unit Cost (\$/bbl)	\$179	\$268				
No. Wells	0 \$0	0 \$0	to.	Per-well costs x no. of wells		
TOTAL ANNUAL CA Cost (\$)	\$0	\$0 <u>[</u>	\$0	Per-well costs x no. of wells		
UNIT COSTS						
Drilling days (DWD; SWD)	7.9	5.1		from industry		
Proportion of drilling time to total operational time (I.e., SCE rental time)	0.4		مرينهم والمميينم	ment labor and materials, asserbable multiplier (4.6) from effebore DD		
BAT Solids Control Equipment (cuttings dryer + fines removal unit) Installation and Downtime Costs: Installation	\$3,840 \$52,000			ment, labor, and materials; geographic multiplier (1.6) from offshore DD of GOM cost range; plus geographic multiplier		
: Downtime	\$32,000 \$38,400			0/hour (avg. GOM cost; Parker, 1999) x 4 hrs; plus geographic multiplier		
Drilling Fluid Costs (lost with cuttings)	\$35,400 \$354	per bbl SBF; GOM cost plus geographic multiplier; cost from vendor				
Monitoring Analyses	ΨΟΟΨ		po. 551 051 , 001	w oost plac goographic malaphor, loost nom vondor		
Footage Drilled with SBF (DWD; SWD)	6,500	7,500				
Retention of Base Fluids by Retort @ \$50/test	50		Retort once/discha	arge/500 ft drilled; 2 discharge points (cuttings dryer; FRU); vendor costs		
Crude Contamination of Drilling Fluid @ \$50/test	\$50		Cost from vendor	3 3., 3., 3.,		
SedTox Monitoring Test	\$575					
CA Wells Currently Using OBF (0% Conversion Scenario)						
TOTAL Cost per Model Well (\$)	\$133,517	\$279,765				
Unit Cost (\$/bbl)	\$180	\$117				
No. Wells	1	1	2			
TOTAL ANNUAL BASELINE CA COST (\$)	\$133,517	\$279,765	\$413,282			

Worksheet No. 6 Compliance Cost Estimates (1999\$): Cuttings Dryer/FRU Discharge (BAT/NSPS Option 1) Existing Sources; Cook Inlet, Alaska (NOTE: SBF disposal projected via onsite injection)

Technology:	Discharge via bo	oth an add-on drill	cuttings "dryer" and fines removal unit;	4.000
Model Well Types			efluid on cuttings (wt:wt) =	4.03%
Model Well Types: Per-Well Waste Volumes:	Shallow-water i	Development Well	S	
Shallow-water Developmen	: 917 352		bbls waste SBF-cuttings (0.2% crude contamination) bbls SBF lost with cuttings [NOTE: volumes not the sam	ne
Shallow-water Exploration	: 1,921		as other BAT1 volumes current practice is to inject Of	BF;
	737		will not upgrade ttmt system to reduce retention on cutting	ngs.]
Cost Item	SWD	SWE		
AK WBF Wells: Grind & Onsite Injection (if applicable)				
Onsite Injection System @ \$8560/day	\$222,560	\$466,520		
(drilling days = 40% of time on rig, thus				
rental days = 2.5 x drilling days)				
Drilling Fluid Cost	\$27,302	\$52,961	Cost from GOM vendor; Geographic	\$180
(WBF lost with cuttings @ \$90/bbl)			Multiplier from Offshore DD	2
TOTAL Cost Per Well (\$		\$519,481		
Unit Cost (\$/bbl		\$191		
No. Wells Fail Limt		0		
Total Annual Cook Inlet Cost per Well Type (\$	·	\$0		
TOTAL ANNUAL Cook Inlet Cost (\$)	\$0	T	
UNIT COSTS BAT Solids Control Eqpt (cuttings dryer+fines removal unit	\$4,800		Includes eqpt/labor/mat'l; geogr multiplier (1.6) from ODI	D
Drilling days (SWD	,	10.9		_
Proportion drilling time to oper'l time (SCE rental time	'		I i i i i i i i i i i i i i i i i i i i	
Installation and Downtime Costs: Installatio	\$65,000		Install'n is avg. of GOM cost range; + geogr multiplier dv	
: Downtime			=\$6K/h (avg. GOM cost; Parker, 1999x4 h; + geogr mult per bbl SBF; GOM cost + geogr multiplier; cost from ve	
SBF Drilling Fluid Costs (lost with cuttings Monitoring Analyse	,		per bbi 3BF, GOW cost + geogr multiplier, cost from ve	riuui
Crude Contamination of Drilling Fluid @ \$50/tes			Cost from vendor	
Retention of Base Fluids by Retort @ \$50/tes			Retort once/discharge/500 ft; 2 discharges	
Footage Drilled with SBF (SWD			(cuttings dryer and FRU); costs from vendor	
AK Well (n=1) Projected to Convert from OBF to SBF; Onsit				
, , , , , , , , , , , , , , , , , , , ,	SWD	SWE		
Cost Item				
Onsite Injection System @ \$8560/day	\$111,280	\$233,260	see Baseline worksheet for details	
(drilling days = 40% of time on rig, thus				
rental days = 2.5 x drilling days)				
Drilling Fluid Cost	\$155,584	\$325,754	Cost from GOM vendor; Geographic	\$221
(SBF lost with cuttings @ \$442/bbl)	*****	AFF6 544	Multiplier from Offshore DD	2
Total Cost per Model Well (\$		\$559,014		
Unit Cost (\$/bbl	·	\$291		
No. Well		0		
Total OBF Costs per Well Type, Cook Inlet (\$	· — — — — — — — — — — — — — — — — — — —	\$0		
Total Annual Baseline OBF Cook Inlet COST (\$ AK OBF Wells (n=2) Projected to Remain OBF; Onsite Injec				
Onsite Injection System @ \$8560/day		1	1	
(drilling days = 40% of time on rig, thus	\$111,280	\$233,260		
rental days = 2.5 x drilling days)	Ų, <u>2</u> 00	\$255,255		
Drilling Fluid Cost	\$55,616	\$116,446	Cost from GOM vendor; Geographic	\$79
(OBF lost with cuttings @ \$158/bbl)	,,,,,,,,	1,	Multiplier from Offshore DD	2
Total Cost per Model Well (\$	\$166,896	\$349,706		_
Unit Cost (\$/bbl		\$182		
No. Well	,	1		
Total OBF Costs per Well Type, Cook Inlet (\$		\$349,706		
	, i		I and the second	
Total Annual Baseline OBF Cook Inlet COST (\$)	\$349,706		

Worksheet No. 6-A BAT/NSPS Option 1, Alaska

WBF Upper Bound (10.73%) Analysis for Zero Discharge Wells (Costs incurred only if WBF wells are projected to fail their toxicity or sheen limits)

SWD 1,404 bbls waste cuttings SWD 6,067 bbls WBF discharged SWE 2,723 bbls waste cuttings SWE 11,769 bbls WBF discharged

WBF Disposal	DWD	DWE	SWD	SWE
Onsite Injection System @\$8560/day	NA	NA	\$222,560	\$466,520
Drilling Fluid Cost			\$27,302	\$52,961
Total Cost / Model Well (\$)			\$249,862	\$519,481
Unit Cost (\$/bbl) No Wells			\$178 3	\$191 1
No. Wells Fail Limits Total Costs per Well Type,			0 \$0	0 \$0
Total Annual Baseline			ΨΟ	\$0

Cook Inlet Costs (\$)

% WBF wells projected to fail toxicity and/or /sheen limitations

10.73%

5.00% adherent fluid \$90 per bbl, WBF

Worksheet No. 7 Compliance Cost Estimates (1999\$): Cuttings Dryer Discharge; Zero Discharge FRUs (BAT/NSPS Option 2) Existing Sources; Gulf of Mexico Technology: Discharge via both an add-on drill cuttings "dryer" and a fines removal unit with an

			,,		
	average fractonal re	etention of base fluid	on cuttings (weight:w	/eight) =	3.82
Model Well Types:	Four types: Deep- a	and Shallow-water, D	evelopment and Exp	loratory	
Per-Well Waste Volumes (bbls):					
	DWD	DWE	SWD	SWE	i
Waste Cuttings @ 3.82% Retention, bbl	999	2,221	660	1,383	l
SBF Lost with Cuttings, bbl	166	368	109	229	l
Waste Fines @ 10.2% Retention, bbl	36	80	24	50	l
SBF Lost with Fines. bbl	14	32	9	21	l

Cost Item	DWD	DWE	SWD	SWE	TOTAL	
GOM Wells Currently Using SBF and Discharging Cuttings						<u> </u>
DISCHARGED PORTION, SBF FLUIDS AND CUTTINGS DRYER WASTI						
BAT Solids Control Equipment @ \$2400/day x rental days	\$47,400	\$105,000	\$31,200	\$65,400		Includes all equipment, labor, and materials;
(Cuttings dryer + fines removal unit costs)						days of rental from industry
Installation and Downtime Costs	\$56,500	\$56,500	\$56,500	\$56,500		Installation is avg. of range; downtime is
(\$32,500 inst + \$24,000 dt)						\$6,000/hour (avg.) x 4 hrs; costs from Parker 1999
Adjustment to Installation/Dopwntime Costs - Multiple Well Structures:						
Projected No. Wells per Structure	2.2	1.6	2.2	1.6		
Adjusted Cost per well for Installation and Downtime	(\$30,818)	(\$21,188)	(\$30,818)	(\$21,188)		
Drilling Fluid Costs @ \$221/bbl: SBF lost with cuttings	\$36,686	\$81,328	\$24,089	\$50,609		Cost from vendor
Monitoring Analyses						
Crude Contamination of Drilling Fluid @ \$50/test	\$50	\$50	\$50	\$50		Cost from vendor
Retention of Base Fluids by Retort @ \$50/test	\$650	\$850	\$750	\$1,000		Retort measured once per discharge per 500 ft drilled;
SedTox Monitoring Test	\$575	\$575	\$575	\$575		cost from vendor
Costs per Well, Discharged Waste/Cuttings Dryer Portion	\$111,043	\$223,116	\$82,346	\$152,947		
Unit Cost (\$/bbl)	\$111	\$100	\$125	\$111		
No. SBF wells + WBF>SBF wells + OBF > SBF wells	17 \$1,887,728	49 \$10.932.660	124 \$10.210.881	74 \$11.318.041	\$34,349,310	
Annual GOM Cost for Cuttings Dryer Units/SBF Wells DISCHARGED PORTION. ZERO DISCHARGE FINES REMOVAL WAST		\$10,932,000	\$10,210,881	\$11,318,041	\$34,349,310	
Zero Discharge of Fines via Hauling	E STREAM					
Disposal Costs @ \$10.13/bbl	\$365	\$810	\$243	\$507		
Handling Cost @ \$4.75/bbl	\$171	\$380	\$114	\$238		
Container Rental @ \$25/box/day x no. bxx x days to fill and haul	\$495	\$2,279	\$366	\$1,064		
Container Northal & \$20,000,000 x 110. 000 x days to fill and had	Ψ100	Ψ2,210	φοσο	Ψ1,001		
Drilling Fluid Costs @\$221/bbl : SBF Lost with Fines						
	\$3,094	\$7,072	\$1,989	\$4,641		
Costs per Well, Zero Discharge FRU Portion	\$4,125	\$10,541	\$2,712	\$6,449		
Unit Cost (\$/bbl)	\$115	\$132	\$113	\$129		
No. SBF wells + WBF>SBF wells + OBF > SBF wells	17	49	124	74		
Annual GOM Cost for Fines Removal Units/SBF Wells	\$70,119.56	\$516,528.60	\$336,240.88	\$477,189.00	\$1,400,078.04	
TOTAL GOM SBF BAT 3 COSTS PER WELL	\$115,167.50	\$233,656.90	\$85,057.44	\$159,395.00	\$25.740.000.04	1
TOTAL GOM SBF BAT 3 COSTS	\$1,957,847.56	\$11,449,188.60	\$10,547,121.88	\$11,795,230.00	\$35,749,388.04	

GOM Wells Currently Using OBF (0% Conversion)						
Cost/Well: Haul and Dispose			\$110,715	\$236,406		
Cost/Well: Grind and Inject			\$83,448	\$174,853	· •	
			'		'	
Weighted (80:20, haul:inject)Average Cost Per Well (\$)			\$105,262	\$224,096	' 	
Unit Weighted Average Cost (\$/bbl)			\$115	\$117	' 	
No. Wells			25	15	40	
TOTAL ANNUAL GOM Cost for OBF Wells (\$)			\$2,631,544	\$3,361,437	\$5,992,981	
TOTAL ANNUAL GOM Cost for SBF Improved Solids Control (\$)					\$35,749,388	
TOTAL ANNUAL GOM Cost , SBF+OBF Wells			,		\$41,742,369	
UNIT COSTS						
BAT Solids Control Equipment (cuttings dryer + fines removal unit)		per day, including all				
Drilling days (DWD; DWE; SWD; SWE)	7.90		5.20	10.90	data from industry	
Proportion of drilling time to total operational time (I.e., SCE rental time)	0.4					
Installation and Downtime Costs: Installation		Installation is avg. of				
: Downtime	\$24,000	downtime = \$6,000/h	nour (avg.) x 4 hrs; co	osts from Parker 199	9	
Zero Discharge of Fines via Hauling:						
Disposal Costs @ \$10.13/bbl	\$10.13	See Worksheet 10				
Handling Cost @ \$4.75/bbl	\$4.75	See Worksheet 10				
Container Rental @ \$25/box/day	\$25	Orentas 2000				
Number boxes	2		2	3		
Number days to fill and haul	9.90	22.79	7.31	14.18		
Drilling Fluid Costs (lost with cuttings)	\$221	per bbl SBF; cost fro	om vendor			
Monitoring Analyses						
Crude Contamination of Drilling Fluid @ \$50/test	\$50	Cost from vendor				
Retention of Base Fluids by Retort @ \$50/test	\$50	Retort measured ond	ce per discharge per	500 ft drilled; one dis	harge point (cuttings o	dryer) costs from vendor
Footage Drilled with SBF (DWD; DWE; SWD; SWE)	6500			10000		
SedTox Monitoring Test	\$575					
Haul/Inject Disposal Costs for SBF Fines Only						
	Deep Water	Deep Water	Shallow Water	Shallow Water		
	Devel. Well	Explor. Well	Devel. Well	Explor. Well		
 						
Disposal Costs @ \$10.13/bbl	\$365	\$810	\$243	\$507		
	7.30	<u> </u>		4-31		
Handling Cost @ \$4.75/bbl	\$171	\$380	\$114	\$238		
Container Rental @ \$25/bx/d	\$495		\$366	\$1,064		
SBF lost with fines	\$3,094	\$7,072	\$1,989	\$4,641		
				. ,		
Total Cost Per Well (\$)	\$4,125	\$10,541	\$2,712	\$6,449		
No. Wells	17	49	124	74		
TOTAL GOM DISPOSAL COSTS	\$70,120	\$516,529	\$336,241	\$477,189	\$1,400,078	1
	,	,-==		. ,	. , ,	-

Worksheet No. 8

(see Baseline CA sheet (W/Ss 2 & 2-A) for SBF/OBF cost projections, all options)

Compliance Cost Estimates (1999\$): Cuttings Dryer Discharge; Zero Discharge FRUs (BAT/NSPS Option 2)

Existing Sources, California (Costs	no longe	r applica	ble; 0% c	onversion to SBF projected)
Technology:	Discharge via b			
AA. J.I.M. II T	retention of bas		3- (- ,	3.82%
Model Well Types: Per-Well Waste Volumes:	Deep- and Sha	llow-vvater De	velopment vveli	S
Per-vveii vvaste volumes.	SWE	SWD	1	
Waste Cuttings @ 3.48% Retention	1,383	660		
SBF Lost with Cuttings	229	109		
Waste Fines @ 9.42% Retention	50	24		
SBF Lost with Fines	20	9		
			-	
Cost Item	SWE	SWD	TOTAL	
SBF Discharge/Disposal				
DAT Solida Control Equipment @ \$2940/day y rental days	¢75.040	¢40,020		Includes all aguinment Johan and materials. Coographia Area
BAT Solids Control Equipment @ \$3840/day x rental days	\$75,840	\$49,920		Includes all equipment, labor, and materials; Geographic Area
Cuttings dryer + fines removal unit				Cost Multiplier (1.6) from Offshore DD; rental days from industry
Installation and Downtime Costs	\$00,400	\$00,400		Installation is ava of range: downtime is \$6,000/hour (ava) x
Installation and Downtime Costs (\$52,000 inst + \$38,400 dt)	\$90,400	\$90,400		Installation is avg. of range; downtime is \$6,000/hour (avg) x 1.6 (area multiplier) x 4 hours; costs from Parker 1999
(ψυΖ,υυυ IIIS) + ψυσ,4υυ αι)				1.0 (area multiplier) x 4 nours, costs nom Parker 1999
Zero Discharge of Fines via Hauling				
Disposal Cost @ \$12.41/bbl	\$0	\$0		
Handling Cost @ \$5.83/bbl	\$0	\$0 \$0		
Container Rental @ \$40/box/day	\$1,154	\$554		
Trucking Cost @ \$354/50-bbl truckload	\$354	\$354		
Tradking Cook & 400 1/00 bbi tradkioda	ψου 1	φοσι		
Drilling Fluid Costs @ \$354/bbl				Cost from vendor; Geographic Multiplier from Offshore DD
SBF lost with cuttings	\$81,066	\$38,586		3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
SBF lost with fines	\$7,080	\$3,186		
	. ,			
Monitoring Analyses				
Crude Contamination of Drilling Fluid @ \$50/test	\$50	\$50		Cost from vendor
Retention of Base Fluids by Retort @ \$50/test	\$650	\$750		Retort measured once per discharge per 500 ft drilled;
SedTox Monitoring Test	\$575	\$0		cost from vendor
TOTAL Cost Per Well (\$)	\$256,815	\$183,446		
Unit Cost (\$/bbl)	\$179	\$268		
No. Wells	0	0		
TOTAL ANNUAL CA Cost (\$)	\$0	\$0	\$0	Per-well costs x no. of wells
UNIT COSTS	•		•	
Drilling days (DWD; SWD)	7.9	5.2		data from industry
raction of drilling time to total operational (I.e., rental) time	0.4	3.2		acia nom mucony
BAT Solids Control Equipment (cuttings dryer + FRU	\$3,840		Includes all equ	uipment, labor, and materials; geographic multiplier (1.6) from offshore D
Installation and Downtime Costs: Installation	\$52,000			ivg. of GOM cost range; plus geographic multiplier
: Downtime	\$38,400			,000/hour (avg. GOM cost; Parker, 1999) x 4 hrs; plus geographic multip
Zero Discharge of Fines via Hauling:	, ,			GOM cost plus geographic multiplier; cost from vendor
Disposal Cost @ \$12.32/bbl	\$0		,	
Handling Cost @ \$5.79/bbl	\$0			
Container Rental @ \$40/box/day	\$40			
Trucking Cost @ \$354/50-bbl truckload	\$354		per 50-bbl truc	k load
Number boxes	3	2	I.	
Number days to fill and haul	9.62	6.92		
Drilling Fluid Costs (lost with cuttings)	354			
Monitoring Analyses				
Footage Drilled with SBF (DWD; SWD)	6,500	7,500		
Retention of Base Fluids by Retort @ \$50/test	\$50		Retort once/di	scharge/500 ft drilled; 1 disharge point (cuttings dryer) costs from vendo
Crude Contamination of Drilling Fluid @ \$50/test	\$50		Cost from vend	dor
SedTox Monitoring Test	\$575			
_			I	

Worksheet No. 9

Compliance Cost Estimates (1999\$): Discharge from Cuttings Dryer; Zero Discharge of Fines (BAT 2)Existing Sources; Cook Inlet, Alaska (NOTE: projected SBF disposal -- onsite injection)

			dryer" and fines removal unit; average fractional retention of base fluid
	on cuttings (wt:wt) :		3.82%
	Shallow-Water Dev	elopment Wells	
Per-Well Waste Volumes:	OWD	0)4/5	7
W . O O	SWD	SWE	4
Waste Cuttings @ 3.48% Retention	917	1,921	LILL ODEL 1 M M PHOTE II
SBF Lost with Cuttings	352	737	bbls SBF lost with cuttings [NOTE: the volumes are not the same
Waste Fines @ 9.42% Retention	NA	NA	as other BAT1 volumes because current practice is to inject OBF;
SBF Lost with Fines	NA	NA	will not upgrade ttmt system to reduce retention on cuttings.]
Cost Item	SWD	SWE	
AK WBF Wells: Grind and Onsite Injection Costs (if applicab	le)		
Onsite Injection System	NA	NA	
@\$8560/day			
D. W. E			
Drilling Fluid Cost, WBF	NA	NA	
TOTAL Cost Per Well (\$)	\$0	\$0	
Unit Cost (\$/bbl)	\$0	\$0	
No. Wells Fail Limits	0	0	
TOTAL ANNUAL Cook Inlet Cost (\$)	\$0	\$0	
		0	
UNIT COSTS			
Drilling days	5.2	10.9	
Proportion of drilling time to total operational (I.e., rental) time	0.4		
SBF Drilling Fluid Cost/bbl (lost with cuttings)	\$442	\$442	2
AK Well (n=1) Projected to Convert from OBF to SBF; Onsit			
0-4/4	SWD	SWE	
Cost Item Onsite Injection System @ \$8560/day	\$111,280	\$233,260	see Baseline worksheet for details
	ֆ111,∠δU	φ∠33,∠60	See daseline worksheet for details
(drilling days = 40% of time on rig, thus			
rental days = 2.5 x drilling days)			
Drilling Fluid Cost	\$155,584	\$325,754	
(SBF lost with cuttings @ \$442/bbl)	φ133,304	ψ323,13 4	
(ODI 1031 WILLI CULLINGS & \$442/DDI)			
Total Cost per Model Well (\$)	\$266,864	\$559,014	
Unit Cost (\$/bbl)	\$291	\$291	
No. Wells	1	0	
TotalAnnual Baseline OBF Cook Inlet COST (\$)	266,864.00	O	
AK OBF Well Projected to Remain OBF; Onsite Injection	200,004.00		
Total Cost per Model Well (\$)	\$166,896	\$349,706	
Unit Cost (\$/bbl)	\$182	\$182	
No. Wells	0	φ102 1	
Total Annual Baseline OBF Cook Inlet COST (\$)	v	\$349,706	
Total Allinaal Basellile Obi Cook lillet COST (\$)		ψ5-5,100	

Worksheet No. 9-A BAT/NSPS Option 2, Alaska

WBF Upper Bound (10.73% Analysis for Zero Discharge Wells (Costs incurred only if WBF wells are projected to fail their toxicity or sheen limits)

WBF Disposal Analysis

WBF Waste Volumes (per ODD Data)
SWD 1,404 bbls waste cuttings SWD 6,067 bbls WBF discharged SWE 2,723 bbls waste cuttings SWE 11,769 bbls WBF discharged

	DWD	DWE	SWD	SWE
Onsite Injection System @\$8560/day	NA	NA	\$222,560	\$466,520
Drilling Fluid Cost			\$27,302	\$52,961
Total Cost / Model Well (\$) Unit Cost (\$/bbl) No. Wells No. Wells Fail Limts Total Costs / Well Type			\$249,862 \$178 3 0 \$0	\$519,481 \$191 1 0 \$0
Total Annual Cost				\$0

% WBF wells projected to fail toxicity and/or /sheen limitations

10.73%

5.00% adherent fluid \$90 per bbl, WBF

Worksheet No. 10 Per Well Compliance Cost Estimates (1999\$): Zero Discharge (BAT 3) Existing Sources; Gulf of Mexico

Technology:		e via Haul and	Land-Dispose		
Model Well Types:			ow-water, Develor	ment and Explo	pratory
Per-Well Waste Volumes:	,			z.n a.i.a z.npie	,
Deep-water Development:	1,387	bbls waste cut	tings (0.2% crude	contamination)	
,		bbls SBF lost v	• ,	- ,	
Deep-water Exploratory:			tings (0.2% crude	contamination)	
		bbls SBF lost v	• ,	- ,	
Shallow-water Development:			tings (0.2% crude	contamination)	
·		bbls OBF lost	• ,	,	
Shallow-water Exploratory:			tings (0.2% crude	contamination)	•
		bbls OBF lost		•	
Cost Item	DWD	DWE	SWD	SWE	
GOM OBF Wells Projected to Convert from SBF to	OBF Under	Zero Discharg	е		
Disposal Cost (\$10.13/bbl)	\$14,050	\$31,251	\$9,289	\$19,460	Average of \$9.50 and \$10.75, quoted from vendors
Handling Cost (\$4.75/bbl)	\$6,588	\$14,654	\$4,356	\$9,125	Vendor quote, includes
					crains, labor, trucks to landfill, etc.
Container Rental (\$25/box/day * "x" boxes* "y" days to fill & haul)	\$14,603	\$74,637	\$7,127	\$29,069	Vendor
Supply Boat Cost (\$8,500/day) x days to fill and haul	\$84,150	\$193,715	\$62,135	\$120,530	Vendors
Drilling Fluid Costs (OBF lost with cuttings @ \$79/bbl)	\$42,028	\$93,536	\$27,808	\$58,223	Vendor quote
TOTAL Cost per Model Well (\$)	\$161,419	\$407,793	\$110,715	\$236,406	
Unit Cost to Haul and Dispose (\$/bbl)	\$116		\$121	\$123	
GOM SBF Wells Projected to Remain as SBF Well			φ121	φ123	
Com CD1 Trong 1 rejected to Remain ac CD1 Tron					
Disposal Cost (\$10.13/bbl)	\$14,050	\$31,251	\$9,289	\$19,460	Average of \$9.50 and \$10.75, quoted from vendors
Handling Cost (\$4.75/bbl)	\$6,588	\$14,654	\$4,356	\$9,125	Vendor quote, includes crains, labor, trucks to landfill, etc.
Container Rental (\$25/box/day * "x" boxes* "y" days to fill & haul)	\$14,603	\$74,637	\$7,127	\$29,069	
Supply Boat Cost (\$8,500/day) x days to fill and haul	\$84,150	\$193,715	\$62,135	\$120,530	Vendors
Drilling Fluid Costs (SBF lost with cuttings @ \$221/bbl)	\$117,572	\$261,664	\$77,792	\$162,877	Vendor and operator quotes
TOTAL Cost per Model Well (\$)	\$236,963	\$575,921	\$160,699	\$341,060	
Unit Cost to Haul and Dispose (\$/bbl)	\$171		\$175	\$178	
For SBF > OBF Wells Under Zero Discharge	\$17.1	\$107	4.70	Ψσ	
Drilling Fluid Costs					
(OBF lost with cuttings @ \$79/bbl)	\$42,028	\$93,536			
Other Unchanged Costs	\$119,391	\$314,257			
TOTAL Cost per Model Well (\$)	\$161,419				
Unit Cost to Haul and Dispose (\$/bbl)	\$116	\$132			
(ψ)	Ţ .	Ţ. V _			

Worksheet No. 11 Per Well Compliance Cost Estimates (1999\$): Zero Discharge (BAT 3) Existing Sources; Gulf of Mexico

Technology:	Zero-Discharge vi	a On-site Grindin	g and Injection		
Model Well Types:	Four types: Deep	- and Shallow-wa	ter, Developmer	nt and Exploratory	
Per-Well Waste Volumes:					
Deep-water Development:	1,387	bbls waste SBF-	cuttings (0.2% c	rude contamination	n)
	532	bbls SBF lost wit	h cuttings		_
Deep-water Exploratory:				rude contamination	n)
		bbls SBF lost wit			
Shallow-water Development:	917	bbls waste SBF-	cuttings (0.2% c	rude contamination	n)
	352	bbls OBF lost wi	th cuttings		
Shallow-water Exploratory:	1,921	bbls waste SBF-	cuttings (0.2% c	rude contamination	n)
	737	bbls OBF lost wi	th cuttings		
Cost Item	DWD	DWE	SWD	SWE	
GOM OBF Wells Projected to Convert from	n SBF to OBF Und	er Zero Dischar			
Onsite Injection System @ \$4280/day			\$55,640	\$116,630	1 1 ' ' '
(drilling days = 40% of time on rig, thus					vacuum system used to transport cuttings
rental days = 2.5 x drilling days)					
Drilling Fluid Costs			\$27,808	\$58,223	
(OBF lost with cuttings @ \$79/bbl)					
TOTAL Cost per Model Well (\$			\$83,448	\$174,853	
Unit Cost to Grind and Inject (\$/bbl			\$91	\$91	
GOM SBF Wells Projected to Remain as S	BF Wells Under Z	ero Discharge			
Onsite Injection System @ \$4280/day	\$84,530	\$187,250			Includes all equipment, labor, and services;
(drilling days = 40% of time on rig, thus					vacuum system used to transport cuttings
rental days = 2.5 x drilling days)					
Drilling Fluid Costs	\$117,572	\$261,664			Drilling Fluid Costs
(SBF lost with cuttings @ \$221/bbl)					(OBF lost with cuttings @ \$79/bbl)
TOTAL Cost per Model Well (\$		\$448,914			
Unit Cost to Grind and Inject (\$/bbl	\$146	\$146			

Worksheet No. 12	onos Cod	t Catimata	o (1000¢)		
Zero Discharge (BAT 3) Compli Existing Sources; Gulf of Mexico		st Estimate	S (1999\$)		
			er Wells Haul & Land-		w-water Wells Inject
Model Well Types: Per-Well Waste Volumes:	Four types: De	ep- and Shallow-wa	ater, Development and	Exploratory	
Deep-water Development:	532	bbls SBF lost with			
Deep-water Exploratory:	1,184	bbls SBF lost with			
Shallow-water Development: Shallow-water Exploratory:	352	bbls OBF lost with	uttings (0.2% crude co cuttings uttings (0.2% crude co	<u> </u>	
Shallow-water Exploratory.		bbls OBF lost with	0 (illamination)	
Cost Item	DWD	DWE	SWD	SWE	TOTAL
GOM OBF Wells Projected to Convert from SBF to O	BF Under Zero	Discharge			
Unit Cost to Haul and Dispose (\$/well) Unit Cost to Grind and Inject (\$/well)	\$161,419 	\$407,793 	\$110,715 \$83,448	\$236,406 \$174,853	
Per Well Cost for Zero Discharge (\$/well)			\$105,262	\$224,096	
No. Wells SUBTOTAL ANNUAL GOM ZD COST (\$)	8 \$1,291,352	25 \$10,194,826	86 \$31,910,282	51 \$11,428,885	170 \$54,825,346
GOM SBF Wells Projected to Remain as SBF Wells U	Inder Zero Disc	harge			
Unit Cost to Haul and Dispose (\$/well) Unit Cost to Grind and Inject (\$/well)	\$236,963 	\$575,921 			
Per Well Cost for Zero Discharge (\$/well)	\$236,963	\$575,921			
No. Wells SUBTOTAL ANNUAL GOM ZD COST (\$)	3 \$710,889	8 \$4,607,368			\$5,318,258
Total Annual GOM Costs for Zero Discharge (\$)					\$60,143,603
GOM OBF Wells Projected to Continue as OBF Wells					
Unit Cost to Haul and Dispose (\$/well) Unit Cost to Grind and Inject (\$/well) Weighted Average Unit Disposal Cost (\$/well)			\$110,715 \$83,448 \$105,262	\$236,406 \$174,853 \$224,096	
Number of Wells Total Cost per Well Type Total Cost			34 \$3,578,900	20 \$4,481,916	54 \$8,060,816
Total Annual GOM Costs for Zero Discharge (\$)					68,204,419
GOM Wells Using SBF Assumed to Switch to WBF U	nder Zero Disc	harge and Fail W	BF Sheen/Tox Limits	3	
Per Well Cost for Zero Discharge (\$/well) No. Wells	\$161,419 1	\$407,793	\$105,262 0	\$224,096 0	
SUBTOTAL ANNUAL GOM ZD COST (\$)	\$161,419	\$815,586		\$0	\$977,005
WBF Disposal Analysis: Remaining WBF Wells + 49 SBF > WBF Discharging Wells)					
	DWD	DWE	SWD	SWE	TOTAL
Unit Cost to Haul and Dispose (\$/well) Unit Cost to Grind and Inject (\$/well) No. Wells, Total	\$906,022 \$543,102 16	\$2,724,495 \$1,235,566 49	\$627,810 \$387,454 511	\$1,429,659 \$768,992 298	
Projected % Wells to Fail Sheen/Tox Limitations Projected No. Wells to Fail Sheen/Tox Limitations	10.73%	10.73% 5	10.73% 55	10.73% 32	94
No. Wells Projected to Haul & Land Dispose 80%	2	5	44	26	
No. Wells Projected to Grind & Inject Onsite 20%	0	0	11	6	
Total Cost to Haul & Land Dispose Total Cost to Grind & Inject	\$1,812,044 \$0	\$13,622,475 \$0	\$27,623,640 \$4,261,994	\$37,171,134 \$4,613,951	\$80,229,293 \$8,875,945
Total Cost of Disposal, WBF Wells	\$1,812,044	\$13,622,475	\$31,885,634	\$41,785,085	\$89,105,238
Total GOM Co	st of Disposal,				\$158,286,662

Summary Compliance Costs for Management of Large Volume SBF Wastes, Existing Sources ('40% OBF Wells, 6% WBF Wells Convert'), 1999\$

Lower (0%) WBF Failure Rate Boundary

	Baseline Technology(a)	GOM	CA	AK(CI)	Total Per Technology	NOTES
	Discharge with 10.2% retention of base fluid	29,437,863	0	AK(CI)	rei Technology	Worksheet No. 1
	on cuttings from SBF wells	29,437,003		· ·	29,437,863	Worksheet No. 1
	Zero Dischargecurrent OBF users				23,431,000	Worksheet No.s 1, 2, and 3
	Zoro Zioonargo Gamein GZi Gooro	10,034,296	413,282	516,602	10,964,179	770110110011101011, 2, and 0
	Zero Dischargecurrent WBF users	.,,	., .	,	-,,	
		0	0	0	0	
	TOTAL Per Region	39,472,159	413,282	516,602	40,402,042	
com	pliance Costs: Total Annual					
					Total	
	Technology Option(b)	GOM	CA	AK(CI)	Per Technol	NOTES
AT-1	Discharges from Cuttings Dryer and FRUs	35,569,256	0	266,864		Worksheet No.s 4, 5, and 6
	(ROC = 4.03%); SBF wells				35,836,120	
	Discharges from Cuttings Dryer and FRUs					
	(ROC = 4.03%); OBF wells	5,992,981	413,282	349,706	6,755,969	
	Discharges from Cuttings Dryer and FRUs					
	(ROC = 4.03%); WBF wells	0	0	0	42.502.000	
AT ^	TOTAL Per Region	41,562,237	413,282	616,570	42,592,088	Madahad N 7 0
A1-2	Discharges from Cuttings Dryer only (ROC =	35,749,388	0	266,864	26.046.252	Worksheet No.s 7, 8, and 9
	3.82%); Zero Discharge FRUs; SBF wells Discharges from Cuttings Dryer only (ROC =				36,016,252	
	3.82%); Zero Discharge FRUs; OBF wells	5,992,981	413,282	349,706	6,755,969	
	Discharges from Cuttings Dryer only (ROC =	0,002,001	710,202	343,700	0,100,303	
	3.82%); Zero Discharge FRUs; WBF wells	0	0	0	0	
	TOTAL Per Region	41,742,369	413,282	616,570	42,772,221	
AT-3	Zero Discharge: SBF wells	, , ,	0	,.	, ,	Worksheet No.s 10, 11, and
		5,318,258		0	5,318,258	, , , , , , , , , , , , , , , , , , , ,
	Zero Discharge: OBF wells				· ·	
		62,886,162	413,282	516,602	63,816,045	
	Zero Discharge: WBF wells					
	Zero Discharge: WBF wells	0	0	0	0	
	TOTAL Per Region	68,204,419	0 413,282	0 516,602	0 69,134,303	
ncre		68,204,419	-	-	69,134,303	
ncre	TOTAL Per Region mental Compliance Costs: Total	68,204,419 Annual	413,282	516,602	69,134,303 Total	
ncre	TOTAL Per Region mental Compliance Costs: Total Technology Option	68,204,419	-	-	69,134,303	NOTES
ncre	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and	68,204,419 Annual GOM	413,282 CA	516,602 AK(CI)	69,134,303 Total Per Technol	BAT-1 compliance cost ::
ncre	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit	68,204,419 Annual	413,282	516,602	69,134,303 Total	BAT-1 compliance cost :: total baseline cost differential
ncre	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and	68,204,419 Annual GOM 2,090,078	413,282 CA	516,602 AK(CI) 99,968	69,134,303 Total Per Technol 2,190,046	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost ::
ncre	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines	68,204,419 Annual GOM	413,282 CA	516,602 AK(CI)	69,134,303 Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential
ncre	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and	68,204,419 Annual GOM 2,090,078 2,270,210	413,282 CA	516,602 AK(CI) 99,968 99,968	69,134,303 Total Per Technol 2,190,046 2,370,178	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge	68,204,419 Annual GOM 2,090,078	413,282 CA	516,602 AK(CI) 99,968	69,134,303 Total Per Technol 2,190,046	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines	68,204,419 Annual GOM 2,090,078 2,270,210	413,282 CA	516,602 AK(CI) 99,968 99,968	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings)	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260	413,282 CA 0	516,602 AK(CI) 99,968 99,968	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost GOM baseline cost differential
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM	413,282 CA 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI)	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000)	413,282 CA 0 0 CA	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost GOM baseline cost differential
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharged WBF cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540)	CA 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost GOM baseline cost differential
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540)	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost differenti
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Zero discharge cost savings ROP-related rig cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000)	413,282 CA 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost differenti
	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharge WBF cost savings Zero discharge cost savings BAT-2: ROP-related rig cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540)	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost differenti
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharge dWBF cost savings Zero discharge cost savings Discharged WBF cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000) (15,552,540) 0 (35,280,000) (15,552,540) 0	413,282 CA 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540)	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost different
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharge dWBF cost savings Zero discharge cost savings Discharged WBF cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000)	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540) (48,832,540)	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost differenti
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharge of WBF cost savings Zero discharge cost savings Discharged WBF cost savings Zero discharge cost savings Incremental Compliance Costs:	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000) (15,552,540) 0 Total Annual	CA C	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540) (48,832,540) Total	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost different NOTES
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000) (15,552,540) 0 (35,280,000) (15,552,540) 0	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540) (48,832,540)	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost different NOTES NOTES
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Discharge ost savings Incremental Compliance Costs: Technology Option BAT-1: Discharge from Cuttings Dryer and	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000) (15,552,540) Total Annual GOM	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 AK(CI) AK(CI)	Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540) (48,832,540) Total Per Technol	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost different NOTES NOTES BAT-1 compliance cost ::
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000) (15,552,540) 0 Total Annual	CA C	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 0 0	69,134,303 Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540) (48,832,540) Total	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost different NOTES NOTES BAT-1 compliance cost :: total baseline cost differentia
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000) (15,552,540) 0 Total Annual GOM (46,742,462)	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 AK(CI) 99,968	Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540) (48,832,540) Total Per Technol (46,642,494)	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost different NOTES NOTES BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost ::
VBF	TOTAL Per Region mental Compliance Costs: Total Technology Option BAT-1: Discharge from Cuttings Dryer and Fines Removal Unit BAT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Zero Discharge of Fines Zero Discharge -related Costs (Savings) Technology Option BAT-1: ROP-related rig cost savings	68,204,419 Annual GOM 2,090,078 2,270,210 28,732,260 GOM (33,280,000) (15,552,540) 0 (33,280,000) (15,552,540) Total Annual GOM	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	516,602 AK(CI) 99,968 99,968 0 AK(CI) 0 0 0 0 AK(CI) AK(CI)	Total Per Technol 2,190,046 2,370,178 28,732,260 Total Per Technol (48,832,540) (48,832,540) Total Per Technol (46,642,494)	BAT-1 compliance cost :: total baseline cost differentia BAT-2 compliance cost :: total baseline cost differentia BAT-3 (ZD) compliance cost GOM baseline cost different NOTES NOTES BAT-1 compliance cost :: total baseline cost differentia

⁽a) GOM: 857 WBF, 201 SBF wells, 67 OBF wells; CA: 5 WBF, 2 OBF wells; AK 4 WBF, 2 OBF wells

⁽b) BAT 1: GOM: 803 WBF, 264 SBF wells, 40 OBF wells; CA: 5 WBF, 2 OBF wells; AK 4 WBF, 1 SBF, 1 OBF wells BAT 2: GOM: 803 WBF, 264 SBF wells, 40 OBF wells; CA: 5 WBF, 2 OBF wells; AK 4 WBF, 1 SBF, 1 OBF wells BAT 3: GOM: 877 WBF, 11 SBF wells, 237 OBF wells; CA: 5 WBF, 2 OBF wells; AK 4 WBF, 2 OBF wells

Worksheet No. 13 Compliance Cost Estimates (1999\$): Baseline Current Practice (BPT) New Sources; Gulf of Mexico

New Sources; Gulf of Mexico						
Technologies:	nologies: Discharge of SBF cuttings, add-on cuttings dryer, avg. ret'n= 10.2% (wt) base fluid on cuttings					
Model Well Types:	Deep- and Shallow-w	ater Development	•	•		
Per-Well Waste Volumes: Deep-water Development:		bbls waste SBF cuttir	ngs (0.2% crude conta	amination)		
Shallow-water Development:	917		ngs (0.2% crude conta	_ amination)		
Cost Item	DWD	DWE	TOTAL			
Drilling Fluid Costs for Wells Currently Using SBF						
(SBF@ \$221/bbl lost w/ cuttings)	\$117,572	\$77,792		Cost from vendor		
Per Well Baseline Cost (\$/well)	\$117,572	\$77,792		Average cost for full analysis		
Unit Cost (\$/bbl)	\$85	\$85				
No. Wells	15	5				
TOTAL ANNUAL BASELINE GOM SBF COST (\$)	\$1,763,580	\$388,960	\$2,152,540	Per-well costs x no. of wells		
Drilling Fluid Costs for Wells Currently Using OBF						
(OBF@ \$79/bbl lost w/ cuttings)				Cost from vendor		
Per Well Baseline Cost (\$/well)	\$161,419	\$110,715				
Unit Cost (\$/bbl)	\$116	\$115				
No. Wells	0	2				
TOTAL ANNUAL BASELINE GOM OBF COST (\$)	\$0	\$221,430	\$221,430			
Drilling Fluid Costs for Wells Currently Using WBF						
(WBF@ \$45/bbl lost w/ cuttings)	\$906,022	\$627,810	haul	Cost from vendor		
Per Well Baseline Cost (\$/well)	V	\$387,454	inject			
Unit Cost (\$/bbl)	\$91	\$86				
No. Wells Fail Limits No. Wells	1 11	3 27				
TOTAL ANNUAL BASELINE GOM WBF COST (\$)	\$906,022	\$1,643,075	\$2,549,097			
TOTAL ANNUAL BASELINE GOM COST (\$)			\$4,923,067			

Summary Compliance Costs for Management of Large Volume SBF Wastes, New + Existing Sources ('40% OBF Wells, 6% WBF Wells Convert'), 1999\$ Lower (0%) WBF Failure Rate Boundary

					Total	
	seline Technology	GOM	CA	AK(CI)	Per Technol	NOTES
Dis	scharge with 9.42% retention of base fluid	31,590,403	0	0		Worksheet No. 1
	on cuttings (xxx SBF wells in GOM)				31,590,403	
Zei	ro Dischargecurrent OBF users only					Worksheet No.s 1, 2, and 3
((xxxx GOM wells; xxxx CA wells; xxxx AK well)	10,255,726	413,282	516,602	11,185,610	
Zei	ro Dischargecurrent WBF users only					
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0	i
	TOTAL Per Region	41,846,129	413,282	516,602	42,776,013	
mulia		41,040,129	413,202	310,002	42,770,013	
прпа	nce Costs: Total Annual				Total	
Те	chnology Option	дом	CA	AK(CI)	Per Technol	NOTES
_	T-1: Discharge from Cuttings Dryer and	37,471,928	0	266,864		Worksheet No.s 4, 5, and 6
	Fines Removal Unit (R = 3.68%)*	37,471,320	J	200,004	37,738,792	Worksheet No.3 4, 3, and 0
	ro Dischargecurrent OBF users only				31,130,132	1
	•	0.400.000	440.000	0.40.700	0.000.004	ł
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	6,103,696	413,282	349,706	6,866,684	
	ro Dischargecurrent WBF users only					1
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0	1
	TOTAL Per Region	43,575,624	413,282	616,570	44,605,476	
2 BA	T-2: Discharge from Cuttings Dryer	37,656,164	0	266,864		Worksheet No.s 7, 8, and 9
	(R = 3.48%) and Zero Discharge of Fines*				37,923,028	
	ro Dischargecurrent OBF users only				,,	1
	· · · · · · · · · · · · · · · · · · ·	6 100 000	442.000	340.700	6 000 004	
	(xxxx GOM wells; xxxx CA wells; xxxx AK well) ro Dischargecurrent WBF users only	6,103,696	413,282	349,706	6,866,684	
	· · · · · · · · · · · · · · · · · · ·					1
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0	
	TOTAL Per Region	43,759,860	413,282	616,570	44,789,712	
3 BA	T 3 Zero Discharge					Worksheet No.s 10, 11, and 12
(x	exxx current SBF wells)	6,029,147	0	0	6,029,147	
Zei	ro Dischargecurrent OBF users only					1
- 1	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	64,925,253	413,282	516,602	65,855,137	1
	ro Dischargecurrent WBF users only	, ,	,		, ,	1
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0	1
	TOTAL Per Region	70,954,400	413,282	516,602	71,884,284	
romo	ntal Compliance Costs: Total Annu		,	0.0,002	,,	
enie	ntal Compliance Costs. Total Annic	iai			Total	
	·		CA	VK(CI)	Total	NOTES
Te	chnology Option	GOM	CA	AK(CI)	Total Per Technol	NOTES
Te	cchnology Option T-1: Discharge from Cuttings Dryer and	GOM		` '	Per Technol	BAT-1 compliance cost ::
Te BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit		CA	AK(CI)		BAT-1 compliance cost :: total baseline cost differential
Te BA	cchnology Option T-1: Discharge from Cuttings Dryer and	GOM		` '	Per Technol	BAT-1 compliance cost ::
Te BA F BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit	GOM		` '	Per Technol	BAT-1 compliance cost :: total baseline cost differential
Te BA F BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines	GOM 1,729,495	0	99,968	Per Technol 1,829,463	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential
Te BA F BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and	GOM 1,729,495	0	99,968	1,829,463 2,013,699	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost ::
Te BA F BA Zer	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines	GOM 1,729,495 1,913,731	0	99,968	1,829,463 2,013,699	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost ::
Te BA F BA Zer	cchnology Option IT-1: Discharge from Cuttings Dryer and Fines Removal Unit IT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge**	GOM 1,729,495 1,913,731	0	99,968	1,829,463 2,013,699	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Zei	cchnology Option IT-1: Discharge from Cuttings Dryer and Fines Removal Unit IT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge**	GOM 1,729,495 1,913,731	0	99,968	Per Technol 1,829,463 2,013,699 29,108,271	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Zei F-rel	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge** ated Costs (Savings)	GOM 1,729,495 1,913,731 29,108,271 GOM	0 0 0	99,968 99,968 0	Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Zei F-rel	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000)	0 0 0 CA	99,968 99,968 0 AK(CI)	Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Zei F-rel	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045)	0 0 0 CA 0	99,968 99,968 0 AK(CI) 0	Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Zei F-rel	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000)	0 0 0 CA	99,968 99,968 0 AK(CI)	Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Zei F-rel BA	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045)	0 0 0 CA 0	99,968 99,968 0 AK(CI) 0	Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA F BA Zei F-rel BA	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0	0 0 0 0 CA 0 0	99,968 99,968 0 AK(CI) 0 0	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA F BA Zei F-rel BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000)	0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differentia NOTES
Te BA F BA Zei Te BA BA BA BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge "* ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Zero discharge WBF cost savings Discharged WBF cost savings Zero discharge cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 0	0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differentia NOTES
Te BA FF-rel Te BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge "* ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Zero discharge WBF cost savings Discharged WBF cost savings Zero discharge cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000)	0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045) (50,956,045)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BAA	cchnology Option T-1: Discharge from Cuttings Dryer and T-2: Discharge from Cuttings Dryer and T-2: Discharge from Cuttings Dryer and T-2: Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings T-2: ROP-related rig cost savings Discharged WBF cost savings Discharged WBF cost savings T-2: ROP-related rig cost savings Discharged WBF cost savings T-2: ROP-related rig cost savings T-2: ROP-related rig cost savings Discharge dwBF cost savings T-2: ROP-related rig cost savings	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 Annual	0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0 0	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA BA BA Tinct	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharge WBF cost savings Zero discharge cost savings Discharged WBF cost savings Zero discharge cost savings Zero discharge cost savings T-2: ROP-related rig cost savings Zero discharge Cost savings Zero discharge Cost savings Zero discharge Cost savings Temental Compliance Costs: Total	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 0	0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045) (50,956,045)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA BA T Inc. Te BA	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharge WBF cost savings Zero discharge cost savings T-2: ROP-related rig cost savings Discharged WBF cost savings Zero discharge Cost savings T-2: Discharge from Cuttings Dryer and	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 Annual GOM	0 0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0 0 AK(CI)	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045) (50,956,045) Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost ::
Te BA BA BA F-rel. Te BA BA BA F-rel. BA	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Zero discharge dwBF cost savings Zero discharge cost savings Zero discharge cost savings Zero discharge Cost savings Zero discharge Cost savings Temental Compliance Costs: Total cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 Annual	0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0 0	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045) (50,956,045) Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential
Te BAA Zei BAA BAA BAA BAA BAA BAA BAA BAA BAA BA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings T-2: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings T-2: ROP-related rig cost savings Zero discharge cost savings T-1: Discharge of WBF cost savings T-1: Discharge from Cuttings Dryer and Sines Removal Unit T-2: Discharge from Cuttings Dryer and	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 Annual GOM (49,226,550)	0 0 0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0 AK(CI) 99,968	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045) Total Per Technol (49,126,582)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost ::
Te BAA	cchnology Option T-1: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Zero discharge cost savings T-2: ROP-related rig cost savings Zero discharge cost savings T-2: ROP-related rig cost savings T-2: Discharge of Stavings T-3: Discharge of Stavings T-4: Discharge from Cuttings Dryer and Tines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 Annual GOM	0 0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0 0 AK(CI)	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045) Total Per Technol (49,126,582)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential
Te BAA	cchnology Option T-1: Discharge from Cuttings Dryer and Fines Removal Unit T-2: Discharge from Cuttings Dryer and Zero Discharge of Fines To Discharge of Fines To Discharge** ated Costs (Savings) cchnology Option T-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings T-2: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings T-2: ROP-related rig cost savings Zero discharge cost savings T-1: Discharge of WBF cost savings T-1: Discharge from Cuttings Dryer and Sines Removal Unit T-2: Discharge from Cuttings Dryer and	GOM 1,729,495 1,913,731 29,108,271 GOM (34,720,000) (16,236,045) 0 (34,720,000) (16,236,045) 0 Annual GOM (49,226,550)	0 0 0 0 0 0 0 0 0 0	99,968 99,968 0 AK(CI) 0 0 0 AK(CI) 99,968	Per Technol 1,829,463 2,013,699 29,108,271 Total Per Technol (50,956,045) Total Per Technol (49,126,582)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost ::

Summary Compliance Costs for Management of Large Volume SBF Wastes, New Sources ('40% OBF Wells, 6% WBF Wells Convert'), 1999\$ Lower (0%) WBF Failure Rate Boundary

					Total	
Ва	aseline Technology	GOM	CA	AK(CI)	Per Technol	NOTES
	scharge with 9.42% retention of base fluid	2,152,540	0	0		Worksheet No. 1
	on cuttings (xxx SBF wells in GOM)	, , , , ,			2,152,540	
	ro Dischargecurrent OBF users only				_,.0_,0.0	Worksheet No.s 1, 2, and 3
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	221,430	0	0	221,430	, , , , , , , , , , , , , , , , , , , ,
		221,100	0	•		
	ro Dischargecurrent WBF users only				•	-
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0	
	TOTAL Per Region	2,373,970	0	0	2,373,970	
mplia	ance Costs: Total Annual					
_				414(01)	Total	NOTES
	echnology Option	GOM	CA	AK(CI)	Per Technol	NOTES
1 BA	AT-1: Discharge from Cuttings Dryer and	1,902,672	0	0		Worksheet No.s 4, 5, and 6
F	Fines Removal Unit (R = 3.68%)*				1,902,672	
Ze	ro Dischargecurrent OBF users only					
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	110,715	0	0	110,715	
Ze	ro Dischargecurrent WBF users only				•	1
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0]
-	TOTAL Per Region	2,013,387	0	0	2,013,387	1
2 BA	AT-2: Discharge from Cuttings Dryer	1,906,776	0	0	2,010,001	Worksheet No.s 7, 8, and 9
		1,000,770	U	U	/ -	VVOINSHEEL INU.S 1, 0, and 9
_	(R = 3.48%) and Zero Discharge of Fines*				1,906,776	
Ze	ro Dischargecurrent OBF users only					
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	110,715	0	0	110,715	
Ze	ro Dischargecurrent WBF users only]
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0	
	TOTAL Per Region	2,017,491	0	0	2,017,491	
3 BA	AT 3 Zero Discharge	_,,,,,,,,,	0	0	_,,,,,,,,	Worksheet No.s 10, 11, and 12
	<u> </u>	740,000	U	0	710 000	Worksheet No.s 10, 11, and 12
_ \	xxxx current SBF wells)	710,889			710,889	
	ro Dischargecurrent OBF users only				0.000.000	1
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	2,039,092	0	0	2,039,092	
	ro Dischargecurrent WBF users only	_	_	_		
	(xxxx GOM wells; xxxx CA wells; xxxx AK well)	0	0	0	0	
	TOTAL Per Region	2,749,981	0	0	2,749,981	
reme	ental Compliance Costs: Total Annu	, ,	0	0	2,749,981	
reme		, ,	0	0	2,749,981 Total	
	ental Compliance Costs: Total Annu	al			Total	NOTES
Te	ental Compliance Costs: Total Annu	, ,	CA	AK(CI)		NOTES
Te	echnology Option VT-1: Discharge from Cuttings Dryer and	GOM	CA	AK(CI)	Total Per Technol	BAT-1 compliance cost ::
Te BA	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit	al			Total Per Technol	BAT-1 compliance cost :: total baseline cost differential
Te BA F BA	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and	GOM (360,583)	CA 0	AK(CI)	Total Per Technol (360,583)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost ::
Te BA F BA	ental Compliance Costs: Total Annual	GOM	CA	AK(CI)	Total Per Technol (360,583)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential
Te BA F BA	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and	GOM (360,583)	CA 0	AK(CI)	Total Per Technol (360,583)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost ::
Te BA F BA	ental Compliance Costs: Total Annual	GOM (360,583)	CA 0	AK(CI)	Total Per Technol (360,583) (356,479)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost ::
Te BA F BA	ental Compliance Costs: Total Annual	GOM (360,583) (356,479)	CA 0	AK(CI) 0 0	Total Per Technol (360,583) (356,479)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost ::
Te BA F BA Ze	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Fro Discharge** Lated Costs (Savings)	GOM (360,583) (356,479)	CA 0	AK(CI) 0 0	Total Per Technol (360,583) (356,479)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Ze	ental Compliance Costs: Total Annual	GOM (360,583) (356,479)	CA 0	AK(CI) 0 0	Total Per Technol (360,583) (356,479) 376,011	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Ze	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Fro Discharge** Lated Costs (Savings)	(360,583) (356,479) 376,011	CA 0 0 0 0	AK(CI) 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Ze	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines AT-1: Discharge from Cuttings Dryer and Zero Discharge of Fines AT-1: RoP-related rig cost savings	GOM (360,583) (356,479) 376,011 GOM (1,440,000)	CA 0 0 CA 0	AK(CI) 0 0 0 AK(CI) 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Ze	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines Fron Discharge** Intelligent Costs (Savings) echnology Option AT-1: ROP-related rig cost savings Discharged WBF cost savings	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505)	CA 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 0 AK(CI) 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential
Te BA F BA Ze F-rel	echnology Option IT-1: Discharge from Cuttings Dryer and Fines Removal Unit IT-2: Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines Interest Costs (Savings) echnology Option IT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 0 AK(CI) 0 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA F BA Ze F-rel	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Fro Discharge of Fines Fro Discharge Fro Dis	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000)	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 AK(CI) 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA F BA Ze F-rel	echnology Option IT-1: Discharge from Cuttings Dryer and Fines Removal Unit IT-2: Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines Interest Costs (Savings) echnology Option IT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 0 AK(CI) 0 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA F BA Ze F-rel	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines Fro Discharge of Fines Fro Discharge Fro Dis	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000)	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 AK(CI) 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA F BA Ze F-rel BA BA BA	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines AT-1: Discharge from Cuttings Dryer and Zero Discharge of Fines AT-2: Discharge of Fines AT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Zero discharge cost savings Zero discharge cost savings	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 0	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 0 AK(CI) 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA Ze F-rel BA BA	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines AT-1: Discharge from Cuttings Dryer and Zero Discharge of Fines AT-2: Discharge of Fines AT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Zero discharge cost savings Zero discharge cost savings	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505)	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 0 AK(CI) 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BAA Ze F-rel BAA BAA T I Inc	echnology Option NT-1: Discharge from Cuttings Dryer and Fines Removal Unit NT-2: Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines Into Discharge of	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 Annual	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 AK(CI) 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505) (2,123,505)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BAA F-rel BAA F-rel BAA F-rel BAA	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines Fron Discharge** Interest Costs (Savings) echnology Option AT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings Exercise of Savings Discharge Cost savings Discharge Cost savings Zero discharge cost savings Zero discharge cost savings Termental Compliance Costs: Total Annual Compliance Costs: Total Costnology Option	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 0	CA 0 0 0 CA 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 0 AK(CI) 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505) (2,123,505)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES
Te BA Ze F-rel BA BA T Inc	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines Fine Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines Fine Discharge of Fines Fine Discharge from Cuttings Dryer and AT-1: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Zero discharge cost savings Zero discharge cost savings Temental Compliance Costs: Total A Echnology Option AT-1: Discharge from Cuttings Dryer and	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 Annual GOM	CA 0 0 0 CA 0 0 CA 0 0 CA CA	AK(CI) 0 0 AK(CI) 0 0 AK(CI) 0 0 AK(CI)	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505) (2,123,505) Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost ::
Te BA F-rel	echnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge from Cuttings Dryer and Zero Discharge of Fines In Discharge of Fines In Discharge of Fines In Discharge of Fines In Cotton Cuttings Dryer and In Cotton Cuttings Dryer	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 Annual	CA 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 AK(CI) 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505) (2,123,505) Total Per Technol	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential
Te BAA F-rel BAA F-rel BAA F-rel BAA BAA BAA F Inc	chnology Option IT-1: Discharge from Cuttings Dryer and Fines Removal Unit IT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines IT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines IT-2: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings EXT-2: ROP-related rig cost savings Discharged WBF cost savings Discharged WBF cost savings EXT-2: ROP-related rig cost savings Discharged WBF cost savings Discharged WBF cost savings EXT-1: Discharge from Cuttings Dryer and Ext-1: Discharge from Cuttings Dryer and Ext-2: Discharge from Cuttings Dryer and Ext-2: Discharge from Cuttings Dryer and	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 Annual GOM	CA 0 0 0 CA 0 0 CA 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 AK(CI) 0 0 AK(CI) 0 AK(CI) 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505) (2,123,505) Total Per Technol (2,484,088)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential
Te BAA Ze FF-rel BAA BAA T Inc BAA BAA	chnology Option AT-1: Discharge from Cuttings Dryer and Fines Removal Unit AT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines In Discharge from Cuttings Dryer and Zero Discharge of Fines In Discharge of Fines In Discharge In Discharg	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 Annual GOM	CA 0 0 0 CA 0 0 CA 0 0 CA CA	AK(CI) 0 0 AK(CI) 0 0 AK(CI) 0 0 AK(CI)	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505) (2,123,505) Total Per Technol (2,484,088)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential
Te BAA Ze FF-rel BAA BAA T Inc BAA BAA	chnology Option IT-1: Discharge from Cuttings Dryer and Fines Removal Unit IT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines IT-2: Discharge from Cuttings Dryer and Zero Discharge of Fines IT-2: ROP-related rig cost savings Discharged WBF cost savings Zero discharge cost savings Discharged WBF cost savings Discharged WBF cost savings Discharged WBF cost savings EXT-2: ROP-related rig cost savings Discharged WBF cost savings Discharged WBF cost savings EXT-2: ROP-related rig cost savings Discharged WBF cost savings Discharged WBF cost savings EXT-1: Discharge from Cuttings Dryer and Ext-1: Discharge from Cuttings Dryer and Ext-2: Discharge from Cuttings Dryer and Ext-2: Discharge from Cuttings Dryer and	GOM (360,583) (356,479) 376,011 GOM (1,440,000) (683,505) 0 (1,440,000) (683,505) 0 Annual GOM	CA 0 0 0 CA 0 0 CA 0 0 CA 0 0 0 0 0 0 0 0 0 0 0 0 0	AK(CI) 0 0 AK(CI) 0 0 AK(CI) 0 AK(CI) 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Per Technol (360,583) (356,479) 376,011 Total Per Technol (2,123,505) (2,123,505) Total Per Technol (2,484,088)	BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost :: total baseline cost differential BAT-3 (ZD) compliance cost :: GOM baseline cost differential NOTES NOTES BAT-1 compliance cost :: total baseline cost differential BAT-2 compliance cost ::

Worksheet No. 14 Compliance Cost Estimates (1999\$): Discharge from Cuttings Dryer and FRUs (BAT 1 Technology) New Sources; Gulf of Mexico

1,	,				
Technology:	Discharge via add	d-on drill cuttings "d	ryer;" fines removal	unit, avg retention 4.03% (wt) base fluid on cuttings	
Model Well Types:	Deep- and Shallo	w-water Developme	ent		
Per-Well Waste Volumes: Deep-water Development:		bbls waste SBF cu	uttings (0.2% crude	contamination)	
Shallow-water Development:	684		uttings (0.2% crude	- contamination)	
Cost Item	DWD SWD TOTAL				
GOM Wells Currently Using SBF and Discharging Cuttings					
BAT Solids Control Equipment @ \$2400/day x rental days (Cuttings dryer plus fines removal unit that reduces base fluid retention from 10.2% to 4.03%)	\$47,400	\$31,200		Includes all equipment, labor, and materials; days of rental from industry	
Drilling Fluid Costs (SBF lost with cuttings @ \$221/bbl) Monitoring Analyses	\$39,780	\$26,299		Cost from vendor	
SedTox Test	\$575	\$575			
Crude Contamination of Drilling Fluid @ \$50/test	\$50	\$50		Cost from vendor	
Retention of Base Fluids by Retort @ \$50/test	\$1,300	\$1,500		Retort measured once per both discharge points/ 500 ft	
TOTAL Cost Per Well (\$)	\$89,105	\$59,624			
Unit Cost (\$/bbl)	\$86	\$87			
No. Wells		8			
TOTAL ANNUAL GOM Cost for SBF Wells (\$)	\$1,425,680	\$476,992	\$1,902,672		
GOM Wells Currently Using OBF and Zero Discharge Disposal Cost (\$10.13/bbl)	1	\$9,289		Includes all equipment, labor, and materials;	
Disposal Cost (\$10.10/bbi)		ψ9,203		days of rental from industry	
Handling Cost (\$4.75/bbl)		\$4,356		, ,	
Container Rental (\$25/box/day * "x" boxes* "y" days to fill & haul)	NA	\$7,127		Cost from vendor	
Supply Boat Cost (\$8,500/day x days to fill and haul)		\$62,135			
Drilling Fluid Costs (OBF lost with cuttings @ \$79/bbl)		\$27,808			
TOTAL Cost Per Well (\$)		\$110,715			
Unit Cost (\$/bbl)		\$121			
No. Wells	0	1			
TOTAL ANNUAL GOM Cost for OBF Wells (\$)	\$0	\$110,715	\$110,715	Per-well costs x no. of wells	
GOM Wells Currently Using WBF and Zero Discharge					
Unit Cost to Haul and Dispose (\$/well)	\$906,022	\$627,810		Includes all equipment, labor, and materials; days of rental from industry	
Unit Cost to Grind and Inject (\$/well)	\$543,102	\$387,454		Cost from vendor	
(4. 101)	\$5.0,.02	\$00.,.04			
Wtd Avg TOTAL Cost Per Well (\$)	\$833,438	\$579,739			
Unit Cost (\$/bbl)	\$91	\$86			
No. Wells Fail Limits	1	3			
No. Wells TOTAL ANNUAL GOM Cost for WBF Wells (\$)	10 \$906,022	25 \$1,643,075	\$2,549,097		
TOTAL ANNUAL GOM Cost for Wells (\$)			\$4,562,484		

Worksheet No. 15 Compliance Cost Estimates (1999\$): Discharge from Cuttings Dryer and FRUs (BAT 2 Technology) New Sources; Gulf of Mexico

(BAT 2 Technology) New Sources;	Gulf of M	exico		
			er," avg retention 3.8	32% (wt) base fluid on cuttings; zero discharge of fines
Model Well Types: Per-Well Waste Volumes:	Deep- and Shallow-	water Development		
Waste Cuttings @ 3.82% Retention, bbl	DWD 999	SWD 660		
SBF Lost with Cuttings, bbl	166	109		
Waste Fines @ 10.2% Retention, bbl SBF Lost with Fines, bbl	36 14	24 9		
Cost Item	DWD	SWD	TOTAL	
GOM Wells Currently Using SBF and Discharging Cuttings: Dis	scharged Portion,	Cuttings Dryer		
BAT Solids Control Equipment @ \$2400/day x rental days (Cuttings dryer plus fines removal unit that reduces base fluid retention from 10.2 to 4.03%)	\$47,400	\$31,200		Includes all equipment, labor, and materials; days of rental from industry
Drilling Fluid Costs (SBF lost with cuttings @ \$221/bbl) Monitoring Analyses	\$36,686	\$24,089		
SedTox Test	\$575	\$575		
Crude Contamination of Drilling Fluid @ \$50/test Retention of Base Fluids by Retort @ \$50/test	\$50 \$650	\$50 \$750		Cost from vendor Retort measured once / single discharge point/ 500 ft drilled;
TOTAL Cost Per Well (\$) Unit Cost (\$/bb)	\$85,361 \$85	\$56,664 \$86		Retort measured once / single discharge point/ 500 ft drinled,
No. Wells	16	8		
TOTAL ANNUAL GOM Cost for SBF Wells (\$) Zero Discharge Fines Portion	\$1,365,776	\$453,312	1,819,088	Per-well costs x no. of wells
Zero Discharge of Fines via Hauling				
Disposal Costs @ 10.13/bbl Handling Costs @ 4.75/bbl	\$365 \$171	\$243 \$114		See Worksheet 4 See Worksheet 4
Container Rental @ \$25/box/day x days to fill	\$495	\$366		Orentas 2000
Drilling Fluid Costs @ \$221/bbl	\$3,094	\$1,989		Cost from vendor
SBF lost with fines Total Cost per Well, Fines Portion	\$4,125	\$2,712		
No. Wells TOTAL ANNUAL GOM Cost for SBF Wells (\$)	16 \$65,995	\$ \$21,693	87,688	
GOM Wells Currently Using OBF and Zero Discharge				
Disposal Cost (\$10.13/bbl)		\$9,289		Includes all equipment, labor, and materials;
Handling Cost (\$4.75/bbl)		\$4,356		days of rental from industry
Container Rental (\$25/box/day * "x" boxes* "y" days to fill & haul)	NA	\$7,127		Cost from vendor
Supply Boat Cost (\$8,500/day)		\$62,135		
Drilling Fluid Costs (OBF lost with cuttings @ \$79/bbl)		\$27,808		
TOTAL Cost Per Well (\$)		\$110,715		
Unit Cost (\$/bbl)		\$121		
No. Wells	0	1		
TOTAL ANNUAL GOM Cost for OBF Wells (\$)	\$0	\$110,715	\$110,715	Per-well costs x no. of wells
GOM Wells Currently Using WBF and Zero Discharge				Includes all equipment, labor, and materials;
Unit Cost to Haul and Dispose (\$/well)	\$906,022	\$627,810		days of rental from industry
Unit Cost to Grind and Inject (\$/well)	\$543,102	\$387,454		Cost from vendor
Wtd Avg TOTAL Cost Per Well (\$)	\$833,438	\$579,739		
Unit Cost (\$/bbl)	\$91	\$86		
No. Wells Fail Limits No. Wells	1 10	3 25		
TOTAL ANNUAL GOM Cost for WBF Wells (\$)	\$906,022	\$1,643,075	\$2,549,097	Per-well costs x no. of wells
TOTAL ANNUAL GOM Cost for Wells (\$)			\$4,566,588	
Percentage WBF Wells Projected to Fail Sheen/Toxicity Limit and Ha Zero Discharge of Fines via Hauling: Disposal Costs @ \$10.13/bbl	10.13	See Worksheet 10	10.73%	
Handling Cost @ \$4.75/bbl Container Rental @ \$25/box/day Number boxes Number days to fil and haul SedTox Test		See Worksheet 10 Orentas 2000 2 7.31		

Worksheet No. 16 Compliance Cost Estimates (1999\$): Zero Discharge (BAT 3 Technology) New Sources; Gulf of Mexico

Tochnology	Zoro Discharge via	a Haul and Land-Di	icnoco
Technology: Model Well Types:		a Haui and Land-טו v-water Developme	
Per-Well Waste Volumes:	Deep- and Shallov	v-water Developme	ant ————————————————————————————————————
Deep-water Development:	4 207	hhla waata CDE (C	ORE) suttings (0.20/ stude contemination)
Deep-water Development.		bbls SBF (OBF) lo	DBF) cuttings (0.2% crude contamination)
Challey water Davidenment			SBF) cuttings SBF) cuttings (0.2% crude contamination)
Shallow-water Development:		,	, , ,
	352	bbls OBF (SBF) lo	ost with cuttings
Cost Item	DWD	SWD	
	22		
GOM Wells Using SBF Assumed to Switch to	OBF Under Zero [Discharge	
Disposal Cost (\$10.13/bbl)	\$14,050	\$9,289	Average of \$9.50 and \$10.75, quoted
			from vendors
Handling Cost (\$4.75/bbl)	\$6,588	\$4,356	Vendor quote; includes crains, labor, trucks
			to landfill, etc.
Container Rental			
(\$25/box/day * "x" boxes* "y" days to fill & haul)	\$14,603	\$7,127	Vendor cost estimate; 39 boxes estimated capacity required
Supply Boat Cost (\$8,500/day)	\$84,150	\$62,135	Vendors
Drilling Fluid Costs	\$42,028	\$27,808	Vendor quote
(OBF lost with cuttings @ \$79/bbl)			
TOTAL Cost per Model Well (\$)	\$161,419	\$110,715	
Unit Cost to Haul and Dispose (\$/bbl)	\$176	\$121	
GOM Wells Using SBF Assumed to Retain SB			
Disposal Cost (\$10.13/bbl)	\$14,050	\$9,289	Average of \$9.50 and \$10.75, quoted
			from vendors
Handling Cost (\$4.75/bbl)	\$6,588	\$4,356	Vendor quote; includes crains, labor, trucks
			to landfill, etc.
Container Rental			Vendor cost estimate; 39 boxes estimated capacity required
(\$25/box/day * "x" boxes* "y" days to fill & haul)	\$14,603	\$7,127	
Supply Boat Cost (\$8,500/day)	\$84,150	\$62,135	Vendors
Drilling Fluid Costs	\$117,572	\$77,792	Vendor quote
(SBF lost with cuttings @ \$221/bbl)	****		
TOTAL Cost per Model Well (\$)	\$236,963	\$160,699	
Unit Cost to Haul and Dispose (\$/bbl)	\$171	\$175	
GOM Wells Using WBF Assumed to Retain WI			(00.50 1040.75 4.1
Disposal Cost (\$10.13/bbl)	\$102,495	\$75,681	Average of \$9.50 and \$10.75, quoted
Handling Cost (\$4.75/bh!)	¢40.004	¢05 407	from vendors
Handling Cost (\$4.75/bbl)	\$48,061	\$35,487	Vendor quote; includes crains, labor, trucks
O-stain an Bantal			to landfill, etc.
Container Rental	# 040 404	6440400	Vendor cost estimate; 39 boxes estimated capacity required
(\$25/box/day * "x" boxes* "y" days to fill & haul)	\$213,124	\$116,198	
C b. D+ C+ (\$0 500/-1)	# 400,000	C404070	Man dana
Supply Boat Cost (\$8,500/day)	\$168,300	\$124,270	Vendors
Drilling Fluid Coots	CO74 040	6070 474	Vender guete
Drilling Fluid Costs	\$374,042	\$276,174	Vendor quote
(WBF lost with cuttings @ \$45/bbl)	£000 000	#007.040	
TOTAL Cost per Model Well (\$)	\$906,022	\$627,810	
Unit Cost to Haul and Dispose (\$/bbl)	\$90	\$84	

Worksheet No. 17 Compliance Cost Estimates (1999\$): Zero Discharge (BAT 3 Technology) New Sources; Gulf of Mexico

Technology:	Zero-Discharge via	On-site Grinding a	nd Injection
Model Well Types:	Deep- and Shallow		
Per-Well Waste Volumes:	Deep- and Shallow	-water Developmen	·
Deep-water Development:	1 387	hhls waste SRF cu	uttings (0.2% crude contamination)
Deep water Development.		bbls SBF lost with	3 \
Shallow-water Development:			uttings (0.2% crude contamination)
Shallow-water Development.		bbls OBF lost with	
	332		
Cost Item	DWD	SWD	Information below is detailed in
GOM Wells Using SBF Assumed to Switch t	o OBF Under Zero	Discharge	
Onsite Injection System @ \$4280/day		\$ 55,640	Includes all equipment, labor, and services; vacuum
(drilling days = 40% of time on rig, thus		, ,,,,,,	system used to transport cuttings
rental days = 2.5 x drilling days)	NA		2,232
, , , , , , , , , , , , , , , , , , , ,			
Drilling Fluid Costs		\$ 27,808	Cost from vendor
(OBF lost with cuttings @ \$79/bbl)			
TOTAL Cost per Model Well (\$)		\$ 83,448	
Unit Cost to Grind and Inject (\$/bbl)		\$ 91	
GOM Wells Using SBF Assumed to Retain S		scharge	
Onsite Injection System @ \$4280/day		\$ 55,640	Includes all equipment, labor, and services; vacuum
(drilling days = 40% of time on rig)			system used to transport cuttings
	NA		
Drilling Fluid Costs		\$ 77,792	Cost from vendor
(SBF lost with cuttings @ \$221/bbl)			
TOTAL Cost per Model Well (\$)		\$ 133,432	
Unit Cost to Grind and Inject (\$/bbl)		\$ 146	
GOM Wells Using WBF Assumed to Retain \			
Onsite Injection System @ \$4280/day	\$ 169,060	\$ 111,280	Includes all equipment, labor, and services; vacuum
(drilling days = 40% of time on rig)			system used to transport cuttings
Drilling Fluid Costs	\$ 374,042	\$ 276,174	Cost from vendor
(SBF lost with cuttings @ \$45/bbl)			
TOTAL Cost per Model Well (\$)		\$ 387,454	
Unit Cost to Grind and Inject (\$/bbl)	\$ 54	\$ 52	
.		T ===	п
Drilling days			
drilling days = 40% of time on rig		0.4	
Onsite Injection System, /day	4280	4280	<u> 1</u>

Worksheet No. 18 Compliance Cost Estimates (1999\$): Zero Discharge (BAT 3 Technology) New Sources; Gulf of Mexico Deep- and 80% Shallow-water Wells Haul & Land-Dispose; 20% Shallow Inject Technology: Model Well Types: Deep- and Shallow-water Development Per-Well Waste Volumes: 1,387 bbls waste SBF cuttings (0.2% crude contamination) Deep-water Development: 532 bbls SBF lost with cuttings Shallow-water Development: 917 bbls waste OBF cuttings (0.2% crude contamination) 352 bbls OBF lost with cuttings Cost Item DWD SWD TOTAL Notes GOM Wells Using SBF Assumed to Switch to OBF Under Zero Discharge Unit Cost to Haul and Dispose (\$/well) 161,419 110,715 From Worksheet No. 3 Unit Cost to Grind and Inject (\$/well) NA 83,448 From Worksheet No. 4 Weighted Average Per Well Cost (\$/well) 161,419 105,262 Assumes 80% of shallow water sells haul, Weighted Average Unit Cost (\$/bbl) 116 115 No. Wells 8 SUBTOTAL ANNUAL GOM ZD COST (\$) 1,291,352 747,739 2,039,092 GOM Wells Using SBF Assumed to Retain SBF Under Zero Discharge Unit Cost to Haul and Dispose (\$/well) 236,963 160,699 From Worksheet No. 3 Unit Cost to Grind and Inject (\$/well) NA 133,432 Weighted Average Per Well Cost (\$/well) 236,963 155,246 Assumes 100% of deep water wells haul Weighted Average Unit Cost (\$/bbl) 171 146 No. Wells SUBTOTAL ANNUAL GOM ZD COST (\$) 710,889 0 710,889 GOM Wells Using WBF Assumed to Retain WBF Under Zero Discharge

627,810

387,454

579,739

86

3

27

1,643,075

906,022

543.102

833,438

91

2

15

1,812,044

Total Annual GOM Costs for Zero Discharge (\$)

Weighted Average Per Well Cost (\$/well)

SUBTOTAL ANNUAL GOM ZD COST (\$)

Weighted Average Unit Cost (\$/bbl)

No. Wells Fail Limits

No. Wells

Unit Cost to Haul and Dispose (\$/well)

Unit Cost to Grind and Inject (\$/well)

3,455,119 6,205,100 From Worksheet No. 3

Assumes 100% of deep water wells haul

Worksheet No. 19 Compliance Cost Estimates (1999\$), Small Volume SBF Wastes BAT Option (Zero Discharge)

[Estimated Small-Volume Waste Amount per well = 75 bbls]

		Existing Sources			New Sources			Total Existing & New Sources		
			BAT			BAT			BAT	
Cost Item	Cost	Baseline	1 & 2	BAT 3	Baseline	1 & 2	BAT 3	Baseline	1 & 2	BAT 3
(Costs from Wksht No. 10) Disposal cost @ \$10.13/bbl Handling cost @ 4.75/bbl Container rental @ \$25/25-bbl box/day Cost Per Well Total Number of Wells	\$760 \$356 \$105 \$1,221	201	264	11	20	24	3	221	288	14
Total Regional Cost		\$245,421	\$322,344	\$13,431	\$24,420	\$29,304	\$3,663	\$269,841	\$351,648	\$17,094
CALIFORNIA (no longer applicable: no SBF wells) Disposal cost @ \$12.47/bbl Handling cost @ \$5.86/bbl Container Rental @ \$40/25-bbl box/day Trucking cost @ \$354/50-bbl truckload Cost Per Well Total Number of Wells	\$935 \$440 \$120 \$708 \$2,203	0	0	0	0	0	0	0	0	0
Total Regional Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
COOK INLET (not applicable; wastes injected onsite, no add'l cost) Disposal cost @ \$540 per 8-bbl box 8-bbl box purchase cost @ \$135/box Trucking cost @ \$1,944 per 8-box truckload Cost Per Well Total Number of Wells	\$5,400 \$1,350 \$3,888 \$10,638	0	0	0	0	0	0	0	0	0
Total Regional Cost		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Annual Cost		\$245,421	\$322,344	\$13,431	\$24,420	\$29,304	\$3,663	\$269,841	\$351,648	\$17,094

Worksheet No. 20:

WBF Upper Bound (10.73%) Analysis for Zero Discharge Wells

(Costs incurred only if WBF wells are projected to fail toxicity of sheen limits)

WBF Disposal Analysis

WBF Waste Volumes (per ODD data)					
Deep-water Devel	1,901	bbls cuttings			
_	8,217	bbls WBF discharged			
Deep-water Explor	4,376	bbls cuttings			
_	18,916	bbls WBF discharged			
Shallow-water Develop	1,404	bbls cuttings			
_	6,067	bbls WBF discharged			
Shallow-water Explor	2,723	bbls cuttings			
	11,769	bbls WBF discharged			

WBF Disposal Analysis

TIBI Biopoda / maryolo				
	DWD	DWE	SWD	SWE
Disposal Cost (\$10.13/bbl)	\$102,495	\$235,948	\$75,681	\$146,804
Handling Cost (\$4.75/bbl)	\$48,061	\$110,637	\$35,487	\$68,837
Container Rental x WBF days to fill and haul	. ,	\$1,129,414	\$116,198	\$437,227
Supply Boat Cost (\$8,500/day) x WBF days to fill and haul		\$387,430	\$124,270	\$241,060
Drilling Fluid Costs		\$861,066.00	\$276,174	\$535,732
TOTAL Cost / Model Well (\$)	\$906,022	\$2,724,495	\$627,810	\$1,429,659

5.00%	adherent drilling fluid
\$45.00	per bbl, WBF

Worksheet No. 21: Baseline Current Practice (BPT), Existing Sources, California WBF Upper Bound (10.73%) Analysis for Zero Discharge Wells (Costs incurred only if WBF wells are projected to fail their toxicity or sheen limits) WBF Cuttings, bbl/well (from ODD) DWD 1,901 bbls waste cuttings WBDrilling Fluid, bbl/well (from ODD) DWD bbls WBF discharged 8,217 DWE WBF Cuttings, bbl/well (from ODD) bbls waste cuttings 4,376 WBDrilling Fluid, bbl/well (from ODD) DWE 18,916 bbls WBF discharged WBF Cuttings, bbl/well (from ODD) SWD 1,404 bbls waste cuttings WBDrilling Fluid, bbl/well (from ODD) 6,067 bbls WBF discharged SWD WBF Cuttings, bbl/well (from ODD) SWE 2.723 bbls waste cuttings bbls WBF discharged WBDrilling Fluid, bbl/well (from ODD) **SWE** 11,769 % WBF wells projected to fail toxicity and/or /sheen limitations 10.73% WBF HAUL & LAND DISPOSE COSTS DWD DWE SWD SWE \$121,922 Disposal Cost (\$ 8.41/bbl) \$85,123 \$195,957 \$62,855 Handling Cost (\$ 3.95/bbl) \$40,008 \$92,100 \$29,542 \$57,304 \$1,804,968 \$703,328 Container Rental \$341,352 \$186,551 (\$40/box/day * "x" boxes* "y" days to fill & haul) Supply Boat Cost (\$8,500/day x days to fill and haul) \$168,300 \$387,430 \$124,270 \$241,060 Trucking Cost (\$354/truck load) \$76,582 \$175,855 \$56,727 \$109,909 Drilling Fluid Costs \$728,496 \$1,677,024 \$537,912 \$1,043,424 (WBF lost with cuttings @ \$72/bbl) No. Wells Total Cost / WBF Well (Haul) \$1,439,861 \$4,333,333 \$997,860 \$2,276,949 No. Wells Fail Limits **TOTAL CA WBF Haul & Land Dispose Costs** \$0 \$0 \$0 \$0 \$0 DWD DWE SWD SWE **Unit Costs** bbl waste,OBF 1,387 3,085 917 1,921 no. bxx waste,OBF 59 131 39 23.5 bbl/bx 23.5 23.5 23.4 bbl WBF, tot 10,118 23,292 7,471 14,492 bxx WBF 990 319 620 431 Davs to fill & haul . WBF 19.8 45.58 14.62 28.36 Container Renta \$40 \$40 \$40 \$40 bx/trk no trks 216 496 160 310 cost/truck \$355 \$355 \$355 \$355 WBF cost (+CA multiplier, 1.6) \$72.00 \$72.00 \$72.00 \$72.00

Worksheet No. 21A: Baseline Current Practice (BPT), Existing Sources, California WBF Upper Bound (10.73%) Analysis for Zero Discharge Wells (Costs incurred only if WBF wells are projected to fail their toxicity or sheen limits) WBF Cuttings, bbl/well (from ODD) DWD bbls waste cuttings WBDrilling Fluid, bbl/well (from ODD) DWD 8,217 bbls WBF discharged WBF Cuttings, bbl/well (from ODD) DWE 4,376 bbls waste cuttings WBDrilling Fluid, bbl/well (from ODD) bbls WBF discharged **DWE** 18,916 WBF Cuttings, bbl/well (from ODD) SWD 1.404 bbls waste cuttings WBDrilling Fluid, bbl/well (from ODD) bbls WBF discharged SWD 6,067 WBF Cuttings, bbl/well (from ODD) SWE 2,723 bbls waste cuttings WBDrilling Fluid, bbl/well (from ODD) SWE 11,769 bbls WBF discharged % WBF wells projected to fail toxicity and/or /sheen limitations 10.73% WBF GRIND & INJECT COSTS DWD DWE SWD SWE Onsite Injection System @ \$4280/day \$299,600 \$135,248 \$89,024 \$186,608 x rental days x CA geographic multiplier **Drilling Fluid Costs** \$728,496 \$1,677,024 \$537,912 \$1,043,424 Total Cost / WBF Well (Grind & Inject) \$1,028,096 \$1,812,272 \$626,936 \$1,230,032 Unit Cost (\$/bbl) \$102 \$78 \$84 \$0 No. Wells Fail Limits n 0 0 0 No. Wells 0 1 **TOTAL CA WBF Grind & Inject Costs** \$0 \$0 \$0 \$0 \$0 SWD DWD DWE SWE **Unit Costs** \$4,280 \$4,280 \$4,280 Onsite Inject System \$4,280 Drilling days 10.9 17.5 7.9 5.2 Drilling days : Operating Days 0.4 0.4 0.4 0.4 **Rental Davs** 43.8 19.8 13.0 27.3 Geographic multiplier 1.6 1.6 1.6 1.6 WBF Drilling Fluid \$45.00 \$45.00 \$45.00 \$45.00 bbl WBF Lost to Disposal 10,118 23,292 7,471 14,492 lb/bbl wet cuttings (cuttings + 5% df) 566 lb/bbl WBF 461 Disposal Cost (\$8.41/bbl) \$85,123 \$195,957 \$62,855 \$121,922 WBDrilling Fluid + Cuttings, bbl/well (from ODD) 10,118 23,292 7,471 14,492

Worksheet No. 22A: BPT, Existing Sources, Alaska

WBF Upper Bound (10.73%) Analysis for Zero Discharge Wells

(Costs incurred only if WBF wells are projected to fail their toxicity or sheen limits)

WBDrilling F	uid, bbl/day (from ODD)
SWD	1,404 bbls waste cuttings (0.2% crude contamination)
SWD	6,067 bbls WBF discharged
SWE	2,723 bbls waste cuttings (0.2% crude contamination)
SWE	11,769 bbls WBF discharged

WBF DISPOSAL ANALYSIS

	DWD	DWE	SWD	SWE	
Onsite Injection System @ \$8560/day		NA	\$222,560	\$466,520	2x factor for increased drilling time for WBF compared to OBF/SBF
Drilling Fluid Cost			\$27,302	\$52,961	
Total Cost / Model Well			\$249,862	\$519,481	
Unit Cost (\$/bbl) No. Wells No. Wells Fail Limts			\$178 3 0	\$191 1 0	
Onsite Injection System @ \$8560/day			\$0	\$0	
Total Annual Baseline Cook Inlet Cost(\$)	WBF			\$0	

5.00% adherent fluid \$90.00 /bbl, AK WBF

GOM WBF \$45.00

AK:GOM multiplier 2

% WBF wells projected to fail toxicity and/or /sheen limitations 10.73%

Ī	WORKSHEET 23:
١	WBF COST ADJUSTMENTS TO BAT 1 AND BAT 2 EXISTING SOURCE OPTIONS

REDUCTION IN RIG TIME-ASSOCIATED COSTS					
	DWD	DWE	SWD	SWE	Totals
No. days, SBF interval	7.9	17.5	5.2	10.9	
WBF-to-SBF drilling efficiency	0.5	0.5	0.5	0.5	
Estimated days to drill, WBF	15.8	35.0	10.4	21.8	
Additional days required to drill, WBF	7.9	17.5	5.2	10.9	
Projected no. WBF > SBF wells (BAT 1,2)	1	2	32	19	
Estimated drilling day reductions	8	35	166	207	
Estimated average daily rig cost	\$80,000	\$80,000	\$80,000	\$80,000	
Estimated rig-time cost reductions, per well type	\$640,000	\$2,800,000	\$13,280,000	\$16,560,000	
Total estimated WBF zero discharge disposal costs, per well type					\$33,280,000

COST OF DISCHARGED WBF					
	DWD	DWE	SWD	SWE	
Estimated days to drill, WBF	15.8	35.0	10.4	21.8	
Average daily WBF discharge rate, bbl /day	415	415	415	415	
Projected no. WBF > SBF wells (BAT 1,2)	1	2	32	19	
Estimated drilling day reductions	15.8	70	332.8	414.2	
Average daily WBF discharge rate, bbl /day	415	415	415	415	
Estimated WBF discharge, bbl	6,557	29,050	138,112	171,893	
Estimated average WBF cost, per bbl	\$45.00	\$45.00	\$45.00	\$45.00	
Estimated WBF discharge costs, per well type	\$295,065	\$1,307,250	\$6,215,040	\$7,735,185	
Total estimated WBF zero discharge disposal cost					

	DWD	DWE	SWD	SWE
Projected no. WBF > SBF wells (BAT 1,2)	1	2	32	19
% WBF wells failing permit limits	10.73%	10.73%	10.73%	10.73%
Estimated WBF wells requiring zero discharge	0	0	3	2
haul	0	0	2	2
inject	0	0	1	0
Estimated zero discharge cost per well				
haul	\$906,022	\$2,724,495	\$627,810	\$1,429,659
inject	\$543,102	\$1,235,566	\$387,454	\$768,992
Estimated zero discharge cost per well hauled	\$0	\$0	\$1,255,620	\$2,859,318
Estimated zero discharge cost per well injected	\$0	\$0	\$387,454	\$0
Estimated WBF zero discharge disposal costs, per well type	\$0	\$0	\$1,643,074	\$2,859,318
Total estimated WBF zero discharge disposal costs,				

EDUCTION IN RIG TIME-ASSOCIATED COSTS					
	DWD	DWE	SWD	SWE	Tota
No. days, SBF interval	7.9	17.5	5.2	10.9	
WBF-to-SBF drilling efficiency	0.5		0.5	0.5	
Estimated days to drill, WBF	15.8		10.4	21.8	
Additional days required to drill, WBF	7.9	17.5	5.2	10.9	
Projected no. WBF > SBF wells (BAT 1,2)	1	0	2	0	
Estimated drilling day reductions	8	0	10	0	
Estimated average daily rig cost	\$80,000		\$80,000	\$80,000	
Estimated rig-time cost reductions, per well type Total estimated WBF zero discharge disposal costs, per well type	\$640,000	\$0	\$800,000	\$0	\$1
OST OF DISCHARGED WBF	DWD	DWE	SWD	SWE	
Estimated days to drill, WBF	15.8		10.4	21.8	
Average daily WBF discharge rate, bbl /day	415		415	415	
Projected no. WBF > SBF wells (BAT 1.2)	1	0	2	0	
Estimated drilling day reductions	15.8		20.8	ő	
Average daily WBF discharge rate, bbl /day	415		415	415	
Estimated WBF discharge, bbl	6,557	0	8,632	0	
Estimated average WBF cost, per bbl	\$45.00	\$45.00	\$45.00	\$45.00	
Estimated WBF discharge costs, per well type	\$295,065	\$0	\$388,440	\$0	
Total estimated WBF zero discharge disposal cost					\$
ERO DISCHARGE COSTS, WBF WELLS PROJECTED TO FAIL ERMIT LIMITS AND REQUIRE ZERO DISCHARGE					
	DWD	DWE	SWD	SWE	
Projected no. WBF > SBF wells (BAT 1,2)	1	0	2	0	
% WBF wells failing permit limits	10.73%	10.73%	10.73%	10.73%	
Estimated WBF wells requiring zero discharge	0	0	0	0	
haul	0	0	0	0	
inject	0	0	0	0	
Estimated zero discharge cost per well haul	\$00e 000	\$2.724.40F	\$627,810	\$1,429,659	
inject	\$906,022 \$543,102	\$2,724,495 \$1,235,566	\$387,454	\$768,992	
Estimated zero discharge cost per well hauled	\$543,102	. , , ,	\$367,434 \$0	\$0	
Estimated zero discharge cost per well injected	\$0	\$0	\$0 \$0	\$0	
Estimated WBF zero discharge disposal costs, per well type	\$0	\$0 \$0	\$0 \$0	\$0 \$0	

\$2,123,505

Estimated zero discharge cost per well injected Estimated WBF zero discharge disposal costs, per well type Total estimated WBF zero discharge disposal costs,

Total estimated WBF cost adjustments

APPENDIX VIII-3

(Deleted)

APPENDIX VIII-4

Pollutant Loadings (Removals) Worksheets

WORKSHEET No. 1:

Deep Water Development Model Well

BPT Baseline Loadings Model Well: DWD **Existing Sources**

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and

0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) =

778,050

Whole Drilling Fluid Discharged per Well (bbl) =

533

	Annual Pollutant	Annual Pollutant
Pollutant Name		
Pollutarit Name	Loadings (lbs.) per DWD Model SBF Well	Loadings (lbs.) per DWD Model OBF Well
	DWD Wodel SBF Well	Model OBF Well
Conventional Pollutants		
Total Oil as SBF Basefluid	101,357.9	0
Total Oil as Formation Oil	313.0	o
Total Oil (SBF Basefluid + Form. Oil)	101.670.9	o
TSS (associated with discharged SBF)	71,166.2	o
TSS (associated with dry cuttings)	778,050.0	0
TSS (total)	849,216.2	Ö
Total Conventional Pollutants (this	0.10,210.2	Ğ
value used in subsequent		
eng./nwgi/ea/econ. modeling)	950,887.1	0.0
Priority Pollutant Organics	,	
Naphthalene	0.5347	0
Fluorene	0.2916	0
Phenanthrene	0.6917	0
Phenol	0.0019	0
Total Organic Priority Pollutants	1.5199	0.0
Priority Pollutants, Metals		
Cadmium	0.0783	0
Mercury	0.0071	0
Antimony	0.4056	0
Arsenic	0.5053	0
Berylium	0.0498	0
Chromium	17.0799	0
Copper	1.3308	0
Lead	2.4979	0
Nickel	0.9607	0
Selenium	0.0783	0
Silver	0.0498	0
Thallium	0.0854	0
Zinc	14.2688	0
Total Metals Priority Pollutants	37.3978	0.0

BPT Baseline Loadings

Model Well:

DWD **Existing Sources**

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

DWD Model SBF Well	Loadings (lbs.) per DWD Model OBF Well
0.45, 470.4	
	0
41845.7278	0
1091.9956	0
1.0390	0
6.2270	0
3.0099	0
28.2970	0
3.4063	0
4.3036	0
0.0166	0
5.5936	0
0.2384	0
43,635.3	0.0
994,561.4	0.0
	1.0390 6.2270 3.0099 28.2970 3.4063 4.3036 0.0166 5.5936 0.2384

BAT/NSPS Option 1 Loadings Model Well: DWD

Existing Sources

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) =

778,050 180.5

Whole Drilling Fluid Discharged per Well (bbl) =

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWD Model SBF Well	Annual Pollutant Reductions (lbs.) per DWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWD Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			(2 4 222 4)
Total Oil as SBF Basefluid	34,296.1	67,061.8	(34,296.1)
Total Oil as Formation Oil	105.9	207.1	(105.9)
Total Oil (SBF Basefluid + Form. Oil)	34,402.0	67,268.9	(34,402.0)
TSS (associated with discharged SBF)	24,080.3	47,085.9	(24,080.3)
TSS (associated with dry cuttings)	778,050.0	0.0	(778,050.0)
TSS (total)	802,130.3	47,085.9	(802,130.3)
Total Conventional Pollutants (this			
value used in subsequent			
eng./nwqi/ea/econ. modeling)	836,532.3	114,354.8	(836,532.3)
Priority Pollutant Organics			
Naphthalene	0.1809	0.3537	(0.1809)
Fluorene	0.0987	0.1930	(0.0987)
Phenanthrene	0.2341	0.4576	(0.2341)
Phenol	0.0006	0.0012	(0.0006)
Total Organic Priority Pollutants	0.5143	1.0056	(0.5143)
Priority Pollutants, Metals			
Cadmium	0.0265	0.0518	(0.0265)
Mercury	0.0024	0.0047	(0.0024)
Antimony	0.1373	0.2684	(0.1373)
Arsenic	0.1710	0.3343	(0.1710)
Berylium	0.0169	0.0330	(0.0169)
Chromium	5.7793	11.3006	(5.7793)
Copper	0.4503	0.8805	(0.4503)
Lead	0.8452	1.6527	(0.8452)
Nickel	0.3251	0.6357	(0.3251)
Selenium	0.0265	0.0518	(0.0265)
Silver	0.0169	0.0330	(0.0169)
Thallium	0.0289	0.0565	(0.0289)
Zinc	4.8281	9.4407	(4.8281)
Total Metals Priority Pollutants	12.6542	24.7437	(12.6542)

BAT/NSPS Option 1 Loadings

Model Well:

DWD **Existing Sources**

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

DWD Model SBF Well	DWD Model SBF Well [BPT Load-Option Load]	DWD Model OBF Well [BPT Load-Option Load]
218.4055	427.0648	(218.4055)
14159.1918	27,686.5360	(14,159.1918)
369.4947	722.5009	(369.4947)
0.3516	0.6875	(0.3516)
2.1070	4.1200	(2.1070)
1.0185	1.9914	(1.0185)
9.5756	18.7214	(9.5756)
1.1527	2.2536	(1.1527)
1.4563	2.8473	(1.4563)
0.0056	0.0110	(0.0056)
1.8928	3.7007	(1.8928)
0.0807	0.1577	(0.0807)
14,764.7	28,870.6	(14,764.7)
851,310.2	143,251.2	(851,310.2)
	14159.1918 369.4947 0.3516 2.1070 1.0185 9.5756 1.1527 1.4563 0.0056 1.8928 0.0807 14,764.7	218.4055 427.0648 14159.1918 27,686.5360 369.4947 722.5009 0.3516 0.6875 2.1070 4.1200 1.0185 1.9914 9.5756 18.7214 1.1527 2.2536 1.4563 2.8473 0.0056 0.0110 1.8928 3.7007 0.0807 0.1577

BAT/NSPS Option 2 Loadings Model Well: DWD

Existing Sources

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and

0.2% (vol.) Crude Contamination

758,397

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) =

165.9

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWD Model SBF Well	Annual Pollutant Reductions (lbs.) per DWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWD Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			
Total Oil as SBF Basefluid	31,533.7	69,824.2	(31,533.7)
Total Oil as SBF Basellulu Total Oil as Formation Oil	97.4	215.6	(31,333.7)
Total Oil (SBF Basefluid + Form. Oil)	31,631.1	70,039.8	(31,631.1)
TSS (associated with discharged SBF)	22,140.7	49,025.5	(22,140.7)
TSS (associated with dry cuttings)	758,396.9	49,025.5 19,653.1	(758,396.9)
TSS (total)	780,537.6	68,678.7	(780,537.6)
Total Conventional Pollutants (this	760,537.6	00,070.7	(160,551.0)
value used in subsequent			
eng./nwqi/ea/econ. modeling)	812.168.6	138.718.5	(010 160 6)
Priority Pollutant Organics	612,166.6	136,716.5	(812,168.6)
Naphthalene	0.1663	0.3684	(0.1663)
Fluorene	0.1003	0.2009	(0.1003)
Phenanthrene	0.0907	0.4766	(0.0907)
Phenol	0.0006	0.0013	(0.0006)
Total Organic Priority Pollutants	0.4727	1.0472	(0.4727)
Priority Pollutants, Metals	0.4727	1.0472	(0.4721)
Cadmium	0.0244	0.0539	(0.0244)
Mercury	0.0022	0.0049	(0.0022)
Antimony	0.1262	0.2794	(0.1262)
Arsenic	0.1572	0.3481	(0.1572)
Berylium	0.0155	0.0343	(0.0155)
Chromium	5.3138	11.7661	(5.3138)
Copper	0.4140	0.9168	(0.4140)
Lead	0.7771	1.7208	(0.7771)
Nickel	0.2989	0.6618	(0.2989)
Selenium	0.0244	0.0539	(0.0244)
Silver	0.0155	0.0343	(0.0155)
Thallium	0.0266	0.0588	(0.0266)
Zinc	4.4392	9.8296	(4.4392)
Total Metals Priority Pollutants	11.6349	25.8	(11.6349)

BAT/NSPS Option 2 Loadings

Model Well:

DWD Existing Sources

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Annual Pollutant Loadings (lbs.) per DWD Model SBF Well	Annual Pollutant Reductions (lbs.) per DWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWD Model OBF Well [BPT Load-Option Load]
200.8139	444.6565	(200.8139)
13018.7269	28,827.0009	(13,018.7269)
339.7334	752.2622	(339.7334)
0.3233	0.7158	(0.3233)
1.9373	4.2897	(1.9373)
0.9362	2.0738	(0.9362)
8.8010	19.4959	(8.8010)
1.0594	2.3468	(1.0594)
1.3385	2.9651	(1.3385)
0.0052	0.0114	(0.0052)
1.7397	3.8538	(1.7397)
0.0741	0.1642	(0.0741)
13575.5	30,059.8	(13,575.5)
825,756.2	168,805.1	(825,756.2)
	200.8139 13018.7269 339.7334 0.3233 1.9373 0.9362 8.8010 1.0594 1.3385 0.0052 1.7397 0.0741	Annual Pollutant Loadings (lbs.) per DWD Model SBF Well [BPT Load-Option Load] 200.8139

Zero Discharge Option Model Well: DWD

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) =

778,050 533.4

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWD Model SBF Well	Annual Pollutant Reductions (lbs.) per DWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWD Model OBF Well [BPT Load-Option Load]
Commentional Pollutants			
Conventional Pollutants Total Oil as SBF Basefluid	0	101,357.9	0
Total Oil as SBF Basellulu Total Oil as Formation Oil	0	313.0	0
Total Oil (SBF Basefluid + Form. Oil)	0	101,670.9	0
TSS (associated with discharged SBF)	0	71,166.2	0
TSS (associated with discharged 3B1)	0	778,050.0	0
TSS (total)	0	849,216.2	0
Total Conventional Pollutants (this	Ü	043,210.2	J
value used in subsequent			
eng./nwqi/ea/econ. modeling)	0.0	950,887.1	0.0
Priority Pollutant Organics	0.0	000,001	0.0
Naphthalene	0	0.5347	0
Fluorene	0	0.2916	0
Phenanthrene	0	0.6917	0
Phenol	0	0.0019	0
Total Organic Priority Pollutants	0.0	1.5199	0.0
Priority Pollutants, Metals			
Cadmium	0	0.0783	0
Mercury	0	0.0071	0
Antimony	0	0.4056	0
Arsenic	0	0.5053	0
Berylium	0	0.0498	0
Chromium	0	17.0799	0
Copper	0	1.3308	0
Lead	0	2.4979	0
Nickel	0	0.9607	0
Selenium	0	0.0783	0
Silver	0	0.0498	0
Thallium Zinc	0	0.0854 14.2688	0
Total Metals Priority Pollutants	0 0.0	14.2688 37.4	0 0.0
Total Metals Fliolity Foliutarits	0.0	37.4	0.0

Zero Discharge Option

Model Well:

DWD

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Annual Pollutant Loadings (lbs.) per DWD Model SBF Well	Annual Pollutant Reductions (lbs.) per DWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWD Model OBF Well [BPT Load-Option Load]
0	645.4704	0
0	41,845.7278	0
0	1,091.9956	0
0	1.0390	0
0	6.2270	0
0	3.0099	0
0	28.2970	0
0	3.4063	0
0	4.3036	0
0	0.0166	0
0	5.5936	0
0	0.2384	0
0.0	43,635.3	0.0
0.0	994,561.4	0.0
	Loadings (lbs.) per DWD Model SBF Well	Annual Pollutant Loadings (lbs.) per DWD Model SBF Well BPT Load-Option Load

WORKSHEET No. 2:

Deep Water Exploratory Model Well

BPT Baseline Loadings Model Well: **DWE Existing Sources**

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) =

1,729,910

Whole Drilling Fluid Discharged per Well (bbl) =

1186

	Annual Pollutant	Annual Pollutant
Pollutant Name	Loadings (lbs.) per	Loadings (lbs.) per DWE
	DWE Model SBF Well	Model OBF Well
Conventional Pollutants		
Total Oil as SBF Basefluid	225,358.4	0
Total Oil as Formation Oil	695.9	0
Total Oil (SBF Basefluid + Form. Oil)	226,054.3	0
TSS (associated with discharged SBF)	158,230.4	0
TSS (associated with dry cuttings)	1,729,910.0	0
TSS (total)	1,888,140.4	0
Total Conventional Pollutants (this		
value used in subsequent		
eng./nwqi/ea/econ. modeling)	2,114,194.6	0.0
Priority Pollutant Organics		
Naphthalene	1.1887	0
Fluorene	0.6484	0
Phenanthrene	1.5379	0
Phenol	0.0042	0
Total Organic Priority Pollutants	3.3792	0.0
Priority Pollutants, Metals		
Cadmium	0.1741	0
Mercury	0.0158	0
Antimony	0.9019	0
Arsenic	1.1234	0
Berylium	0.1108	0
Chromium	37.9753	0
Copper	2.9589	0
Lead	5.5539	0
Nickel	2.1361	0
Selenium	0.1741	0
Silver	0.1108	0
Thallium	0.1899	0
Zinc	31.7252	0
Total Metals Priority Pollutants	83.1501	0.0

BPT Baseline Loadings

Model Well:

DWE Existing Sources

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWE Model SBF Well	Annual Pollutant Loadings (lbs.) per DWE Model OBF Well
Non-Conventional Pollutants		
Aluminum	1435.1335	0
Barium	93039.4487	0
Iron	2427.9340	0
Tin	2.3102	0
Titanium	13.8452	0
Alkylated benzenes	6.6919	0
Alkylated naphthalenes	62.9122	0
Alkylated fluorenes	7.5731	0
Alkylated phenanthrenes	9.5682	0
Alkylated phenols	0.0369	0
Total biphenyls	12.4361	0
Total dibenzothiophenes	0.5300	0
Total Non-Conventional Pollutants	97,018.4	0.0
Total Pollutant Loadings *	2,211,299.6	0.0

BAT/NSPS Option 1 Loadings Model Well: **DWE**

Existing Sources

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) =

1,729,910

Whole Drilling Fluid Discharged per Well (bbl) =

401.3

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWE Model SBF Well	Annual Pollutant Reductions (lbs.) per DWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWE Model OBF Well [BPT Load-Option Load]
Conventional Pollutants	70.050.7	110 101 7	(70.050.7)
Total Oil as SBF Basefluid	76,253.7	149,104.7	(76,253.7)
Total Oil as Formation Oil	235.5	460.4	(235.5)
Total Oil (SBF Basefluid + Form. Oil)	76,489.2	149,565.1	(76,489.2)
TSS (associated with discharged SBF)	53,539.8	104,690.5	(53,539.8)
TSS (associated with dry cuttings)	1,729,910.0	0.0	(1,729,910.0)
TSS (total)	1,783,449.8	104,690.5	(1,783,449.8)
Total Conventional Pollutants (this			
value used in subsequent			// »
eng./nwqi/ea/econ. modeling)	1,859,939.0	254,255.6	(1,859,939.0)
Priority Pollutant Organics	2 1222		(2.4222)
Naphthalene	0.4023	0.7865	(0.4023)
Fluorene	0.2194	0.4290	(0.2194)
Phenanthrene	0.5204	1.0175	(0.5204)
Phenol	0.0014	0.0028	(0.0014)
Total Organic Priority Pollutants	1.1435	2.2357	(1.1435)
Priority Pollutants, Metals			(2.2-22)
Cadmium	0.0589	0.1152	(0.0589)
Mercury	0.0054	0.0105	(0.0054)
Antimony	0.3052	0.5967	(0.3052)
Arsenic	0.3801	0.7433	(0.3801)
Berylium	0.0375	0.0733	(0.0375)
Chromium	12.8496	25.1257	(12.8496)
Copper	1.0012	1.9577	(1.0012)
Lead	1.8792	3.6746	(1.8792)
Nickel	0.7228	1.4133	(0.7228)
Selenium	0.0589	0.1152	(0.0589)
Silver	0.0375	0.0733	(0.0375)
Thallium	0.0642	0.1256	(0.0642)
Zinc	10.7347	20.9904	(10.7347)
Total Metals Priority Pollutants	28.1352	55.0149	(28.1352)

BAT/NSPS Option 1 Loadings

Model Well:

DWE Existing Sources

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWE Model SBF Well	Annual Pollutant Reductions (lbs.) per DWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWE Model OBF Well [BPT Load-Option Load]
Non-Conventional Pollutants			
Aluminum	485.6011	949.5324	(485.6011)
Barium	31481.4312	61,558.0175	(31,481.4312)
Iron	821.5315	1,606.4025	(821.5315)
Tin	0.7817	1.5285	(0.7817)
Titanium	4.6847	9.1604	(4.6847)
Alkylated benzenes	2.2645	4.4274	(2.2645)
Alkylated naphthalenes	21.2890	41.6232	(21.2890)
Alkylated fluorenes	2.5627	5.0104	(2.5627)
Alkylated phenanthrenes	3.2378	6.3304	(3.2378)
Alkylated phenols	0.0125	0.0244	(0.0125)
Total biphenyls	4.2083	8.2278	(4.2083)
Total dibenzothiophenes	0.1793	0.3506	(0.1793)
Total Non-Conventional Pollutants	32,827.8	64,190.6	(32,827.8)
Total Pollutant Loadings *	1,892,796.1	318,503.5	(1,892,796.1)

BAT/NSPS Option 2 Loadings Model Well: DWE

Existing Sources

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and

0.2% (vol.) Crude Contamination

1,686,213

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) =

368.9

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWE Model SBF Well	Annual Pollutant Reductions (lbs.) per DWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWE Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			
Total Oil as SBF Basefluid	70,111.8	155,246.6	(70,111.8)
Total Oil as Formation Oil	216.5	479.4	(216.5)
Total Oil (SBF Basefluid + Form. Oil)	70,328.3	155,726.0	(70,328.3)
TSS (associated with discharged SBF)	49,227.4	109,002.9	(49,227.4)
TSS (associated with dry cuttings)	1,686,213.4	43,696.6	(1,686,213.4)
TSS (total)	1,735,440.8	152,699.6	(1,735,440.8)
Total Conventional Pollutants (this			
value used in subsequent			
eng./nwqi/ea/econ. modeling)	1,805,769.1	308,425.5	(1,805,769.1)
Priority Pollutant Organics			
Naphthalene	0.3698	0.8190	(0.3698)
Fluorene	0.2017	0.4467	(0.2017)
Phenanthrene	0.4784	1.0595	(0.4784)
Phenol	0.0013	0.0029	(0.0013)
Total Organic Priority Pollutants	1.0512	2.3280	(1.0512)
Priority Pollutants, Metals			
Cadmium	0.0542	0.1199	(0.0542)
Mercury	0.0049	0.0109	(0.0049)
Antimony	0.2806	0.6213	(0.2806)
Arsenic	0.3495	0.7739	(0.3495)
Berylium	0.0345	0.0763	(0.0345)
Chromium	11.8146	26.1607	(11.8146)
Copper	0.9206	2.0384	(0.9206)
Lead	1.7279	3.8260	(1.7279)
Nickel	0.6646	1.4715	(0.6646)
Selenium	0.0542	0.1199	(0.0542)
Silver	0.0345	0.0763	(0.0345)
Thallium	0.0591	0.1308	(0.0591)
Zinc	9.8701	21.8551	(9.8701)
Total Metals Priority Pollutants	25.8690	57.3	(25.8690)

BAT/NSPS Option 2 Loadings

Model Well:

DWE

Existing Sources

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWE Model SBF Well	Annual Pollutant Reductions (lbs.) per DWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWE Model OBF Well [BPT Load-Option Load]
Non-Conventional Pollutants			
Aluminum	446.4879	988.6456	(446.4879)
Barium	28945.7308	64,093.7179	(28,945.7308)
Iron	755.3605	1,672.5735	(755.3605)
Tin	0.7187	1.5914	(0.7187)
Titanium	4.3074	9.5378	(4.3074)
Alkylated benzenes	2.0817	4.6102	(2.0817)
Alkylated naphthalenes	19.5702	43.3420	(19.5702)
Alkylated fluorenes	2.3558	5.2173	(2.3558)
Alkylated phenanthrenes	2.9764	6.5918	(2.9764)
Alkylated phenols	0.0115	0.0254	(0.0115)
Total biphenyls	3.8685	8.5676	(3.8685)
Total dibenzothiophenes	0.1649	0.3651	(0.1649)
Total Non-Conventional Pollutants	30183.6	66,834.8	(30,183.6)
Total Pollutant Loadings *	1,835,979.7	375,319.9	(1,835,979.7)

Zero Discharge Option Model Well: **DWE**

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) =

1,729,910 1185.9

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWE Model SBF Well	Annual Pollutant Reductions (lbs.) per DWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWE Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			
Total Oil as SBF Basefluid	0	225,358.4	0
Total Oil as Formation Oil	0	695.9	0
Total Oil (SBF Basefluid + Form. Oil)	0	226,054.3	0
TSS (associated with discharged SBF)	0	158,230.4	0
TSS (associated with dry cuttings)	0	1,729,910.0	0
TSS (total)	0	1,888,140.4	0
Total Conventional Pollutants (this			
value used in subsequent			
eng./nwqi/ea/econ. modeling)	0.0	2,114,194.6	0.0
Priority Pollutant Organics			
Naphthalene	0	1.1887	0
Fluorene	0	0.6484	0
Phenanthrene	0	1.5379	0
Phenol	0	0.0042	0
Total Organic Priority Pollutants	0.0	3.3792	0.0
Priority Pollutants, Metals			
Cadmium	0	0.1741	0
Mercury	0	0.0158	0
Antimony	0	0.9019	0
Arsenic	0	1.1234	0
Berylium	0	0.1108	0
Chromium	0	37.9753	0
Copper	0	2.9589	0
Lead	0	5.5539	0
Nickel	0	2.1361	0
Selenium	0	0.1741	0
Silver	0	0.1108	0
Thallium	0	0.1899	0
Zinc	0	31.7252	0
Total Metals Priority Pollutants	0.0	83.2	0.0

Zero Discharge Option

Model Well:

DWE

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Pollutant Name	Annual Pollutant Loadings (lbs.) per DWE Model SBF Well	Annual Pollutant Reductions (lbs.) per DWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per DWE Model OBF Well [BPT Load-Option Load]
Non-Conventional Pollutants			
Aluminum	0	1,435.1335	0
Barium	0	93,039.4487	0
Iron	0	2,427.9340	0
Tin	0	2.3102	0
Titanium	0	13.8452	0
Alkylated benzenes	0	6.6919	0
Alkylated naphthalenes	0	62.9122	0
Alkylated fluorenes	0	7.5731	0
Alkylated phenanthrenes	0	9.5682	0
Alkylated phenols	0	0.0369	0
Total biphenyls	0	12.4361	0
Total dibenzothiophenes	0	0.5300	0
Total Non-Conventional Pollutants	0.0	97,018.4	0.0
Total Pollutant Loadings *	0.0	2,211,299.6	0.0

WORKSHEET No. 3:

Shallow Water Development Model Well

BPT Baseline Loadings Model Well: SWD Existing Sources

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) = 514

Whole Drilling Fluid Discharged per Well (bbl) =

514,150 353

	Annual Pollutant	Annual Pollutant
Pollutant Name	Loadings (lbs.) per	Loadings (lbs.) per SWD
	SWD Model SBF Well	Model OBF Well
Conventional Pollutants		
Total Oil as SBF Basefluid	66,979.2	0.0
Total Oil as Formation Oil	206.8	0.0
Total Oil (SBF Basefluid + Form. Oil)	67,186.0	0.0
TSS (associated with discharged SBF)	47,028.0	0.0
TSS (associated with dry cuttings)	514,150.0	0.0
TSS (total)	561,178.0	0.0
Total Conventional Pollutants (this		
value used in subsequent		
eng./nwqi/ea/econ. modeling)	628,364.0	0.0
Priority Pollutant Organics		
Naphthalene	0.3533	
Fluorene	0.1927	0.0
Phenanthrene	0.4571	0.0
Phenol	0.0012	0.0
Total Organic Priority Pollutants	1.0045	0.0
Priority Pollutants, Metals		
Cadmium	0.0517	0.0
Mercury	0.0047	0.0
Antimony	0.2681	0.0
Arsenic	0.3339	0.0
Berylium	0.0329	0.0
Chromium	11.2867	0.0
Copper	0.8794	0.0
Lead	1.6507	0.0
Nickel	0.6349	0.0
Selenium	0.0517	0.0
Silver	0.0329	0.0
Thallium	0.0564	0.0
Zinc	9.4291	0.0
Total Metals Priority Pollutants	24.71	0.0

BPT Baseline Loadings Model Well: SWD Existing Sources

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWD Model SBF Well	Annual Pollutant Loadings (lbs.) per SWD Model OBF Well
Non-Conventional Pollutants		
Aluminum	426.5	0.0
Barium	27,652	0.0
Iron	721.6	0.0
Tin	0.6866	0.0
Titanium	4.1149	0.0
Alkylated benzenes	1.9891	0.0
Alkylated naphthalenes	18.7002	0.0
Alkylated fluorenes	2.2510	0.0
Alkylated phenanthrenes	2.8441	0.0
Alkylated phenols	0.0110	0.0
Total biphenyls	3.6965	0.0
Total dibenzothiophenes	0.1575	0.0
Total Non-Conventional Pollutants	28,835	0.0
Total Pollutant Loadings *	628,364	0.0

BAT/NSPS Option 1 Loadings Model Well: SWD

Existing Sources

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) =

Whole Drilling Fluid Discharged per Well (bbl) =

514,150 119.3

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWD Model SBF Well	Annual Pollutant Reductions (lbs.) per SWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWD Model OBF Well [BPT Load-Option Load]
O			
Conventional Pollutants	22 222 5	44.045.7	(00,000,5)
Total Oil as SBF Basefluid	22,663.5	44,315.7	(22,663.5)
Total Oil as Formation Oil	70.0	136.8	(70.0)
Total Oil (SBF Basefluid + Form. Oil)	22,733.5	44,452.5	(22,733.5)
TSS (associated with discharged SBF)	15,912.7	31,115.3	(15,912.7)
TSS (associated with dry cuttings)	514,150.0	0.0	(514,150.0)
TSS (total)	530,062.7	31,115.3	(530,062.7)
Total Conventional Pollutants (this value			
used in subsequent eng./nwqi/ea/econ.			
modeling)	552,796.2	75,567.8	(552,796.2)
Priority Pollutant Organics			
Naphthalene	0.1196	0.2338	(0.1196)
Fluorene	0.0652	0.1275	(0.0652)
Phenanthrene	0.1547	0.3024	(0.1547)
Phenol	0.0004	0.0008	(0.0004)
Total Organic Priority Pollutants	0.3399	0.6645	(0.3399)
Priority Pollutants, Metals			
Cadmium	0.0175	0.0342	(0.0175)
Mercury	0.0016	0.0031	(0.0016)
Antimony	0.0907	0.1774	(0.0907)
Arsenic	0.1130	0.2209	(0.1130)
Berylium	0.0111	0.0218	(0.0111)
Chromium	3.8190	7.4677	(3.8190)
Copper	0.2976	0.5819	(0.2976)
Lead	0.5585	1.0921	(0.5585)
Nickel	0.2148	0.4201	(0.2148)
Selenium	0.0175	0.0342	(0.0175)
Silver	0.0111	0.0218	(0.0111)
Thallium	0.0191	0.0373	(0.0191)
Zinc	3.1905	6.2386	(3.1905)
Total Metals Priority Pollutants	8.3621	16.3511	(8.3621)

BAT/NSPS Option 1 Loadings

Model Well:

SWD

Existing Sources

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWD Model SBF Well	Annual Pollutant Reductions (lbs.) per SWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWD Model OBF Well [BPT Load-Option Load]
Non-Conventional Pollutants			
Aluminum	144.3265	282.2124	(144.3265)
Barium	9356.6589	18,295.7811	(9,356.6589)
Iron	244.1690	477.4421	(244.1690)
Tin	0.2323	0.4543	(0.2323)
Titanium	1.3924	2.7226	(1.3924)
Alkylated benzenes	0.6732	1.3159	(0.6732)
Alkylated naphthalenes	6.3289	12.3713	(6.3289)
Alkylated fluorenes	0.7618	1.4892	(0.7618)
Alkylated phenanthrenes	0.9625	1.8815	(0.9625)
Alkylated phenols	0.0037	0.0073	(0.0037)
Total biphenyls	1.2511	2.4455	(1.2511)
Total dibenzothiophenes	0.0533	0.1042	(0.0533)
Total Non-Conventional Pollutants	9,756.8	19,078.2	(9,756.8)
Total Pollutant Loadings *	552,796.2	94,663.1	(562,561.7)

BAT/NSPS Option 2 Loadings Model Well: SWD

Existing Sources

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and

0.2% (vol.) Crude Contamination

Generated per Well (lbs) = 501,163

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) =

109.7

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWD Model SBF Well	Annual Pollutant Reductions (lbs.) per SWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWD Model OBF Well [BPT Load-Option Load]
O			
Conventional Pollutants Total Oil as SBF Basefluid	20,020,4	46 444 4	(00,000,4)
	20,838.1	46,141.1	(20,838.1)
Total Oil as Formation Oil	64.3	142.5	(64.3)
Total Oil (SBF Basefluid + Form. Oil)	20,902.4	46,283.6	(20,902.4)
TSS (associated with discharged SBF)	14,631.0	32,397.0	(14,631.0)
TSS (associated with dry cuttings)	501,162.8	12,987.2	(501,162.8)
TSS (total)	515,793.8	45,384.1	(515,793.8)
Total Conventional Pollutants (this value			
used in subsequent eng./nwqi/ea/econ.	500,000,0	04 007 0	(500,000,0)
modeling)	536,696.2	91,667.8	(536,696.2)
Priority Pollutant Organics	2.1122	0.0404	(0.4400)
Naphthalene	0.1100	0.2434	(0.1100)
Fluorene	0.0600		(0.0600)
Phenanthrene	0.1423		(0.1423)
Phenol	0.0004		(0.0004)
Total Organic Priority Pollutants	0.3126	0.6919	(0.3126)
Priority Pollutants, Metals	2.2121	2.0052	(0.0404)
Cadmium	0.0161	0.0356	(0.0161)
Mercury	0.0015		(0.0015)
Antimony	0.0834	0.1847	(0.0834)
Arsenic	0.1039	0.2300	(0.1039)
Berylium Chromium	0.0102	0.0227	(0.0102)
	3.5114		(3.5114)
Copper	0.2736		(0.2736)
Lead Nickel	0.5135	1.1371	(0.5135)
	0.1975	0.4374	(0.1975)
Selenium Silver	0.0161	0.0356	(0.0161)
Thallium	0.0102	0.0227	(0.0102)
Zinc	0.0176		(0.0176)
	2.9335	6.4956	(2.9335)
Total Metals Priority Pollutants	7.6886	17.0	(7.6886)

BAT/NSPS Option 2 Loadings

Model Well:

SWD Existing Sources

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Annual Pollutant Loadings (lbs.) per SWD Model SBF Well	Annual Pollutant Reductions (lbs.) per SWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWD Model OBF Well [BPT Load-Option Load]
132.7016	293.8373	(132.7016)
8603.0184	19,049.4217	(8,603.0184)
224.5022	497.1089	(224.5022)
0.2136	0.4730	(0.2136)
1.2802	2.8347	(1.2802)
0.6190	1.3701	(0.6190)
5.8196	12.8806	(5.8196)
0.7005	1.5505	(0.7005)
0.8851	1.9590	(0.8851)
0.0034	0.0076	(0.0034)
1.1504	2.5462	(1.1504)
0.0490	0.1085	(0.0490)
8970.9	19,864.1	(8,970.9)
545,675.2	111,549.6	(545,675.2
	Loadings (lbs.) per SWD Model SBF Well 132.7016 8603.0184 224.5022 0.2136 1.2802 0.6190 5.8196 0.7005 0.8851 0.0034 1.1504 0.0490 8970.9	Annual Pollutant Loadings (lbs.) per SWD Model SBF Well [BPT Load-Option Load] 132.7016 293.8373 8603.0184 19,049.4217 224.5022 497.1089 0.2136 0.4730 1.2802 2.8347 0.6190 1.3701 5.8196 12.8806 0.7005 1.5505 0.8851 1.9590 0.0034 0.0076 1.1504 2.5462 0.0490 0.1085 8970.9 19,864.1

Zero Discharge Option Model Well: SWD

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) =

514,150 352.5

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWD Model SBF Well	Annual Pollutant Reductions (lbs.) per SWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWD Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			
Total Oil as SBF Basefluid	0	66,979.2	0
Total Oil as Formation Oil	0	206.8	0
Total Oil (SBF Basefluid + Form. Oil)	0	67,186.0	0
TSS (associated with discharged SBF)	0	47,028.0	0
TSS (associated with discharged SBI)	0	514,150.0	0
TSS (total)	0	561,178.0	0
Total Conventional Pollutants (this value	0	301,170.0	O
used in subsequent eng./nwqi/ea/econ.			
modeling)	0.0	628,364.0	0.0
Priority Pollutant Organics	0.0	020,001.0	0.0
Naphthalene	0	0.3533	0
Fluorene	0	0.1927	0
Phenanthrene	0	0.4571	0
Phenol	0	0.0012	0
Total Organic Priority Pollutants	0.0	1.0045	0.0
Priority Pollutants, Metals			
Cadmium	0	0.0517	0
Mercury	0	0.0047	0
Antimony	0	0.2681	0
Arsenic	0	0.3339	0
Berylium	0	0.0329	0
Chromium	0	11.2867	0
Copper	0	0.8794	0
Lead	0	1.6507	0
Nickel	0	0.6349	0
Selenium	0	0.0517	0
Silver	0	0.0329	0
Thallium	0	0.0564	0
Zinc	0	9.4291	0
Total Metals Priority Pollutants	0.0	24.7	0.0

Zero Discharge Option

Model Well:

SWD

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWD Model SBF Well	Annual Pollutant Reductions (lbs.) per SWD Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWD Model OBF Well [BPT Load-Option Load]
Non-Conventional Pollutants			
Aluminum	0	426.5389	0
Barium	0	27,652.4400	0
Iron	0	721.6111	0
Tin	0	0.6866	0
Titanium	0	4.1149	0
Alkylated benzenes	0	1.9891	0
Alkylated naphthalenes	0	18.7002	0
Alkylated fluorenes	0	2.2510	0
Alkylated phenanthrenes	0	2.8441	0
Alkylated phenols	0	0.0110	0
Total biphenyls	0	3.6965	0
Total dibenzothiophenes	0	0.1575	0
Total Non-Conventional Pollutants	0.0	28,835.0	0.0
Total Pollutant Loadings *	0.0	657,224.8	0.0

WORKSHEET No. 4:

Shallow Water Exploratory Model Well

BPT Baseline Loadings Model Well: SWE Existing Sources

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and

0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) = 1,077,440

Whole Drilling Fluid Discharged per Well (bbl) =

1,077,440 739

	Annual Pollutant	Annual Pollutant
Pollutant Name	Loadings (lbs.) per	Loadings (lbs.) per SWE
	SWE Model SBF Well	Model OBF Well
Conventional Pollutants		
Total Oil as SBF Basefluid	140,360.0	0
Total Oil as Formation Oil	433.4	0
Total Oil (SBF Basefluid + Form. Oil)	140,793.4	0
TSS (associated with discharged SBF)	98,550.6	0
TSS (associated with dry cuttings)	1,077,440.0	0
TSS (total)	1,175,990.6	0
Total Conventional Pollutants (this		
value used in subsequent		
eng./nwqi/ea/econ. modeling)	1,316,784.0	0.0
Priority Pollutant Organics		
Naphthalene	0.7404	0
Fluorene	0.4038	0
Phenanthrene	0.9578	0
Phenol	0.0026	0
Total Organic Priority Pollutants	2.1046	0.0
Priority Pollutants, Metals		
Cadmium	0.1084	0
Mercury	0.0099	0
Antimony	0.5617	0
Arsenic	0.6997	0
Berylium	0.0690	0
Chromium	23.6522	0
Copper	1.8429	0
Lead	3.4591	0
Nickel	1.3304	0
Selenium	0.1084	0
Silver	0.0690	0
Thallium	0.1183	0
Zinc	19.7594	0
Total Metals Priority Pollutants	51.7884	0.0

BPT Baseline Loadings

Model Well:

SWE Existing Sources

Technology = Discharge Assuming 10.20% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWE Model SBF Well	Annual Pollutant Loadings (lbs.) per SWE Model OBF Well
Non-Conventional Pollutants		
Aluminum	893.8443	0
Barium	57947.7681	0
Iron	1512.1904	0
Tin	1.4388	0
Titanium	8.6232	0
Alkylated benzenes	4.1678	0
Alkylated naphthalenes	39.1829	0
Alkylated fluorenes	4.7166	0
Alkylated phenanthrenes	5.9592	0
Alkylated phenols	0.0230	0
Total biphenyls	7.7454	0
Total dibenzothiophenes	0.3301	0
Total Non-Conventional Pollutants	60,426.0	0.0
Total Pollutant Loadings *	1,377,263.9	0.0

BAT/NSPS Option 1 Loadings Model Well: SWE

Existing Sources

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) =

1,077,440 249.9

Whole Drilling Fluid Discharged per Well (bbl) =

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWE Model SBF Well	Annual Pollutant Reductions (lbs.) per SWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWE Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			(1= 100 1)
Total Oil as SBF Basefluid	47,493.1	92,866.9	(47,493.1)
Total Oil as Formation Oil	146.7	286.8	(146.7)
Total Oil (SBF Basefluid + Form. Oil)	47,639.8	93,153.6	(47,639.8)
TSS (associated with discharged SBF)	33,346.2	65,204.4	(33,346.2)
TSS (associated with dry cuttings)	1,077,440.0	0.0	(1,077,440.0)
TSS (total)	1,110,786.2	65,204.4	(1,110,786.2)
Total Conventional Pollutants (this			
value used in subsequent			
eng./nwqi/ea/econ. modeling)	1,158,426.0	158,358.0	(1,158,426.0)
Priority Pollutant Organics			
Naphthalene	0.2505	0.4899	(/
Fluorene	0.1366	0.2672	(0.1366)
Phenanthrene	0.3241	0.6338	(0.3241)
Phenol	0.0009	0.0017	(0.0009)
Total Organic Priority Pollutants	0.7121	1.3926	(0.7121)
Priority Pollutants, Metals			
Cadmium	0.0367	0.0717	(0.0367)
Mercury	0.0033	0.0065	(0.0033)
Antimony	0.1901	0.3717	(0.1901)
Arsenic	0.2368	0.4630	(0.2368)
Berylium	0.0233	0.0456	(0.0233)
Chromium	8.0031	15.6491	(8.0031)
Copper	0.6236	1.2193	(0.6236)
Lead	1.1705	2.2887	(1.1705)
Nickel	0.4502	0.8803	(0.4502)
Selenium	0.0367	0.0717	(0.0367)
Silver	0.0233	0.0456	(0.0233)
Thallium	0.0400	0.0782	(0.0400)
Zinc	6.6859	13.0735	(6.6859)
Total Matala Priority Pollytanta	17 5004	24.2640	(47 5024)

BAT/NSPS Option 1 Loadings

Total Metals Priority Pollutants

Model Well:

SWE **Existing Sources**

34.2649

(17.5234)

Technology = Discharge Assuming 4.03% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWE Model SBF Well	Annual Pollutant Reductions (lbs.) per SWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWE Model OBF Well [BPT Load-Option Load]
Non-Conventional Pollutants			
Aluminum	302.4470	591.3974	(302.4470)
Barium	19607.5826	38,340.1855	(19,607.5826)
Iron	511.6745	1,000.5158	(511.6745)
Tin	0.4869	0.9520	(0.4869)
Titanium	2.9178	5.7054	(2.9178)
Alkylated benzenes	1.4102	2.7577	(1.4102)
Alkylated naphthalenes	13.2572	25.9256	(13.2572)
Alkylated fluorenes	1.5958	3.1208	(1.5958)
Alkylated phenanthrenes	2.0163	3.9430	(2.0163)
Alkylated phenols	0.0078	0.0152	(0.0078)
Total biphenyls	2.6206	5.1248	(2.6206)
Total dibenzothiophenes	0.1117	0.2184	(0.1117)
Total Non-Conventional Pollutants	20,446.1	39,979.9	(20,446.1)
Total Pollutant Loadings *	1,178,890.4	198,373.6	(1,178,890.4)

17.5234

BAT/NSPS Option 2 Loadings Model Well: SWE

Existing Sources

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and

0.2% (vol.) Crude Contamination

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) =

1,050,224 229.8

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWE Model SBF Well	Annual Pollutant Reductions (lbs.) per SWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWE Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			
Total Oil as SBF Basefluid	43,667.7	96,692.2	(43,667.7)
Total Oil as Formation Oil	134.8	298.6	(134.8)
Total Oil (SBF Basefluid + Form. Oil)	43,802.6	96,990.8	(43,802.6)
TSS (associated with discharged SBF)	30,660.3	67,890.3	(30,660.3)
TSS (associated with dry cuttings)	1,050,224.4	27,215.6	(1,050,224.4)
TSS (total)	1,080,884.7	95,105.9	(1,080,884.7)
Total Conventional Pollutants (this			
value used in subsequent			
eng./nwqi/ea/econ. modeling)	1,124,687.3	192,096.7	(1,124,687.3)
Priority Pollutant Organics			
Naphthalene	0.2304	0.5100	(0.2304)
Fluorene	0.1256	0.2782	(0.1256)
Phenanthrene	0.2980	0.6598	(0.2980)
Phenol	0.0008	0.0018	(0.0008)
Total Organic Priority Pollutants	0.6548	1.4498	(0.6548)
Priority Pollutants, Metals			
Cadmium	0.0337	0.0747	(0.0337)
Mercury	0.0031	0.0068	(0.0031)
Antimony	0.1748	0.3870	(0.1748)
Arsenic	0.2177	0.4820	(0.2177)
Berylium	0.0215	0.0475	(0.0215)
Chromium	7.3585	16.2937	(7.3585)
Copper	0.5733	1.2695	(0.5733)
Lead	1.0762	2.3829	(1.0762)
Nickel	0.4139	0.9165	(0.4139)
Selenium	0.0337	0.0747	(0.0337)
Silver	0.0215	0.0475	(0.0215)
Thallium	0.0368	0.0815	(0.0368)
Zinc	6.1474	13.6120	(6.1474)
Total Metals Priority Pollutants	16.1120	35.7	(16.1120)

BAT/NSPS Option 2 Loadings

Model Well:

SWE **Existing Sources**

Technology = Discharge Assuming 3.82% (wt) Retention on Discharged Cuttings and 0.2% (vol.) Crude Contamination

Annual Pollutant Loadings (lbs.) per SWE Model SBF Well	Annual Pollutant Reductions (lbs.) per SWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWE Model OBF Well [BPT Load-Option Load]
		(278.0861)
18028.2721	39,919.4960	(18,028.2721)
470.4613	1,041.7291	(470.4613)
0.4476	0.9912	(0.4476)
2.6828	5.9404	(2.6828)
1.2967	2.8711	(1.2967)
12.1909	26.9919	(12.1909)
1.4675	3.2492	(1.4675)
1.8541	4.1051	(1.8541)
0.0071	0.0158	(0.0071)
2.4098	5.3356	(2.4098
0.1027	0.2274	(0.1027)
18799.3	41,626.7	(18,799.3)
1,143,503.4	233,760.5	(1,143,503.4
	278.0861 278.0861 18028.2721 470.4613 0.4476 2.6828 1.2967 12.1909 1.4675 1.8541 0.0071 2.4098 0.1027 18799.3	Annual Pollutant Loadings (lbs.) per SWE Model SBF Well 278.0861 18028.2721 39,919.4960 470.4613 0.4476 0.9912 2.6828 5.9404 1.2967 2.6828 1.2967 2.8711 12.1909 26.9919 1.4675 3.2492 1.8541 0.0071 0.0158 2.4098 0.1027 0.2274 18799.3

Zero Discharge Option Model Well: SWE

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Dry Cuttings Generated per Well (lbs) = Whole Drilling Fluid Discharged per Well (bbl) = 1,077,440 738.6

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWE Model SBF Well	Annual Pollutant Reductions (lbs.) per SWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWE Model OBF Well [BPT Load-Option Load]
Conventional Pollutants			
Total Oil as SBF Basefluid	0	140,360.0	0
Total Oil as Formation Oil	0	433.4	0
Total Oil (SBF Basefluid + Form. Oil)	0	140,793.4	0
TSS (associated with discharged SBF)	0	98,550.6	0
TSS (associated with dry cuttings)	0	1,077,440.0	0
TSS (total)	0	1,175,990.6	0
Total Conventional Pollutants (this			
value used in subsequent			
eng./nwqi/ea/econ. modeling)	0.0	1,316,784.0	0.0
Priority Pollutant Organics			
Naphthalene	0	0.7404	0
Fluorene	0	0.4038	0
Phenanthrene	0	0.9578	0
Phenol	0	0.0026	0
Total Organic Priority Pollutants	0.0	2.1046	0.0
Priority Pollutants, Metals			
Cadmium	0	0.1084	0
Mercury	0	0.0099	0
Antimony	0	0.5617	0
Arsenic	0	0.6997	0
Berylium	0	0.0690	0
Chromium	0	23.6522	0
Copper	0	1.8429	0
Lead	0	3.4591	0
Nickel	0	1.3304	0
Selenium	0	0.1084	0
Silver	0	0.0690	0
Thallium	0	0.1183	0
Zinc	0	19.7594	0
Total Metals Priority Pollutants	0.0	51.8	0.0

Zero Discharge Option

Model Well:

SWE

Existing Sources

Technology = Zero Discharge of All Cuttings Wastes (assuming 10.20% (wt) retention on zero discharged cuttings)

Pollutant Name	Annual Pollutant Loadings (lbs.) per SWE Model SBF Well	Annual Pollutant Reductions (lbs.) per SWE Model SBF Well [BPT Load-Option Load]	Annual Pollutant Reductions (lbs.) per SWE Model OBF Well [BPT Load-Option Load]
Ion-Conventional Pollutants			
lluminum	0	893.8443	0
Barium	0	57,947.7681	0
on	0	1,512.1904	0
in .	0	1.4388	0
itanium	0	8.6232	0
lkylated benzenes	0	4.1678	0
lkylated naphthalenes	0	39.1829	0
lkylated fluorenes	0	4.7166	0
lkylated phenanthrenes	0	5.9592	0
lkylated phenols	0	0.0230	0
otal biphenyls	0	7.7454	0
otal dibenzothiophenes	0	0.3301	0
otal Non-Conventional Pollutants	0.0	60,426.0	0.0
otal Pollutant Loadings *	0.0	1,377,263.9	0.0
otal Pollutant Loadings * Sum Total of Conventional, Priority,	0.0 and Non-Conventional Polluta	7- 7	63.9

WORKSHEET 5:

Gulf of Mexico: Zero Discharge Summary, Existing Sources

	Pacalina: Zara Diaghares				
	Baseline: Zero Discharge Shallow Water (<	-1 000 ft\	Deep Water	(>1 000 ft)	
	Development (C	Exploratory	Development Development	Exploratory	Total
No. wells, SBF	86	51	16	48	201
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	54,039,305	67,155,986	15,214,194	101,481,343	237,890,828
Total Loadings, Zero Discharge	0	0	0	0	20.,000,020
Onsite Injection (20%S: 0%D)	0	0	0	0	(
Onshore Disposal (80%S:100%D)	0	0	0	0	(
No. wells, OBF	42	25	0	0	67
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
,			·		
Total Loadings, Zero Discharge	26,391,288	32,919,601	0	0	59,310,889
Onsite Injection (20%S: 0%D)	5,278,258	6,583,920	0	0	11,862,178
Onshore Disposal (80%S:100%D)	21,113,031	26,335,681	0	0	47,448,71
Total Toxic Organics Discharge Total Toxic Metals Discharge	86	51 1,260	16	48	202 4,967
Total Toxics Discharge Total Toxics Discharge	2,125 2,212	1,260	395 411	1,186 1,234	4,96, 5,169
Total Non-conventionals Discharge	2,479,814	1,470,587	461,361	1,384,082	5,795,84
		BAT 1: Zero Disc	charge		
	Shallow Water (<1,000 ft)	ı	Deep Water (>1,000 f)	
	Development	Exploratory	Development	Exploratory	
					Total
No wallo SDE	424	74	47		
No. wells, SBF	124 552 706	74	17	49	26-
Loadings/well (lbs)	552,796	1,158,426	836,532	1,859,939	26
Loadings/well (lbs) Total Loadings, Discharge	552,796 68,546,728	1,158,426 85,723,524	836,532 14,221,049	1,859,939 91,137,013	26 259,628,31
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge	552,796 68,546,728 0	1,158,426 85,723,524 0	836,532 14,221,049 0	1,859,939 91,137,013 0	26 259,628,31
Loadings/well (lbs) Total Loadings, Discharge	552,796 68,546,728	1,158,426 85,723,524	836,532 14,221,049	1,859,939 91,137,013	26
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D)	552,796 68,546,728 0 0	1,158,426 85,723,524 0 0	836,532 14,221,049 0 0	1,859,939 91,137,013 0 0	26- 259,628,31-
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF	552,796 68,546,728 0 0 0	1,158,426 85,723,524 0 0 0	836,532 14,221,049 0 0 0	1,859,939 91,137,013 0 0 0	26 259,628,31
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs)	552,796 68,546,728 0 0 0 25 628,364	1,158,426 85,723,524 0 0 0 15 1,316,784	836,532 14,221,049 0 0 0 0 0 950,887	1,859,939 91,137,013 0 0 0 0 0 2,114,195	26 259,628,31 4
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF	552,796 68,546,728 0 0 0	1,158,426 85,723,524 0 0 0	836,532 14,221,049 0 0 0	1,859,939 91,137,013 0 0 0	26 259,628,31 4
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge	552,796 68,546,728 0 0 0 25 628,364 15,709,100	1,158,426 85,723,524 0 0 0 15 1,316,784 19,751,761	836,532 14,221,049 0 0 0 0 0 950,887 0	1,859,939 91,137,013 0 0 0 0 2,114,195 0	26 259,628,31 4 35,460,86
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D)	552,796 68,546,728 0 0 0 0 25 628,364 15,709,100	1,158,426 85,723,524 0 0 0 15 1,316,784 19,751,761 3,950,352	836,532 14,221,049 0 0 0 0 0 950,887 0	1,859,939 91,137,013 0 0 0 0 2,114,195 0	26 259,628,31 4 35,460,86 7,092,17
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D)	552,796 68,546,728 0 0 0 0 25 628,364 15,709,100 3,141,820 12,567,280	1,158,426 85,723,524 0 0 0 15 1,316,784 19,751,761 3,950,352 15,801,409	836,532 14,221,049 0 0 0 0 0 950,887 0	1,859,939 91,137,013 0 0 0 0 2,114,195 0	259,628,31 4 35,460,86 7,092,17 28,368,68
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) Total Toxic Organics Discharge	552,796 68,546,728 0 0 0 0 0 25 628,364 15,709,100 3,141,820 12,567,280	1,158,426 85,723,524 0 0 0 0 15 1,316,784 19,751,761 3,950,352 15,801,409 25	836,532 14,221,049 0 0 0 0 0 950,887 0 0 0 6	1,859,939 91,137,013 0 0 0 0 2,114,195 0 0	26 259,628,31 4 35,460,86 7,092,17 28,368,68
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S: 0%D) Onshore Disposal (80%S:100%D)	552,796 68,546,728 0 0 0 0 25 628,364 15,709,100 3,141,820 12,567,280	1,158,426 85,723,524 0 0 0 15 1,316,784 19,751,761 3,950,352 15,801,409	836,532 14,221,049 0 0 0 0 0 950,887 0	1,859,939 91,137,013 0 0 0 0 2,114,195 0	259,628,31 4 35,460,86 7,092,17 28,368,68

(Gulf of Mexico)		BAT 2: Onshore [Disposal		
	Shallow Water (<1,000 ft)		Deep Water (>1,000	ft)	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	124	74	17	49	264
Loadings/well (lbs)	16,100	33,739	24,364	54,170	
Total Loadings, Zero Discharge	1,996,395	2,496,661	414,182	2,654,327	7,561,565
Total Loadings, Discharge	66,550,333	83,226,863	13,806,867	88,482,686	252,066,749
Onsite Injection (0%S: 0%D)	0	0	0	0	0
Onshore Disposal (100%S:100%D)	1,996,395	2,496,661	414,182	2,654,327	7,561,565
No. wells, OBF Loadings/well (lbs)	25 628,364	1,316,784	950,887	2,114,195	40
Total Loadings, Zero Discharge	15,709,100	19,751,761	0	0	35,460,861
Onsite Injection (20%S: 0%D)	3,141,820	3,950,352	0	0	7,092,172
Onshore Disposal (80%S:100%D)	12,567,280	15,801,409	0	0	28,368,689
Total Toxic Organics Discharge	38.76	23	5	15	83
Total Toxic Metals Discharge	953	569	131	377	2,030
Total Toxics Discharge	992	592	136	392	2,112
Total Non-conventionals Discharge	1,112,397	663,850	152,506	439,576	2,368,329

		BAT 3: Onshore D	Disposal		
	Shallow Water (<1,000 ft)		Deep Water (>1,000 f		
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	0	0	3	8	11
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	0	0	0	0	0
Total Loadings, Zero Discharge			2,852,661	16,913,557	19,766,219
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	0	0	2,852,661	16,913,557	19,766,219
No. wells, OBF Loadings/well (lbs)	128 628,364	76 1,316,784	8 950.887	25 2,114,195	237
Total Loadings, Zero Discharge	80,430,593	100,075,587	7,607,097	52,854,866	240,968,143
Onsite Injection (20%S: 0%D)	16,086,119	20,015,117	0	0	36,101,236
Onshore Disposal (80%S:100%D)	64,344,474	80,060,470	7,607,097	52,854,866	204,866,907
Total SBF+OBF Zero Discharge Loadings:					
Total Zero Disharge Injection Loadings	16,086,119	20,015,117	0	0	36,101,236
Total Zero Discharge Onshore Loadings	64,344,474	80,060,470	10,459,758	69,768,423	224,633,126

WORKSHEET 6:

California: Zero Discharge Summary, Existing Sources

No. wells, SBF		Baseline: Zero Discharge	-1 000 ft\	Doon Water	r /> 1 000 f4\	
Loadings/well (lbs)						Total
Loadings, Well (lbs)	No wells SRF	0	0	0	0	
Total Loadings, Discharge						
Total Loadings, Zero Discharge		· ·	1,316,784	•		
Onsite Injection (80%; 0%DWE)		-	-	_		
No. wells, OBF			-	-	_	
No. wells, OBF						
Loadings/well (lbs) 628,364	Onshore Disposal (20%; 100%DWE)	0	0	0	0	
Total Loadings, Zero Discharge 628,364 1,316,784 0 0 0	No. wells, OBF	1	1	0	0	
Onsite Injection (80%: 0%DWE) 628,364 1,316,784 0 0 0	Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Onsite Injection (80%; 0%DWE) 628,364 1,316,784 0 0 0	Total Landings - Zara Disabarra	600.064	4 240 704	0		4.045.4
Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0		1				1,945,1
Total Toxic Organics Discharge						1,945,1
Total Toxic Metals Discharge						
Total Toxics Discharge						
Shallow Water (<1,000 ft) Deep Water (>1,000 ft) Development Exploratory Development Development Development Exploratory Development Dev						
Shallow Water (<1,000 ft) Deep Water (>1,000 ft)			~			
No. wells, SBF Development Exploratory Development Exploratory Total						
Development Exploratory Development Exploratory Total			DAT 1: Zero Disc	marge		
Development Exploratory Development Exploratory Total		Shallow Water (<1 000 ft)	r	leen Water (>1 000 t	f t \	
No. wells, SBF		Chamer Hater (41,000 h)		сер писе (2 1,000		
No. wells, SBF		Development	Exploratory	Development	Exploratory	Total
Loadings/well (lbs) 552,796 1,158,426 836,532 1,859,939 Total Loadings, Discharge 0 0 0 0 Total Loadings, Zero Discharge 0 0 0 0 Onsite Injection (80%; 0%DWE) 0 0 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 No. wells, OBF						
Loadings/well (lbs) 552,796 1,158,426 836,532 1,859,939 Total Loadings, Discharge 0 0 0 0 Total Loadings, Zero Discharge 0 0 0 0 Onsite Injection (80%; 0%DWE) 0 0 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 No. wells, OBF 1 1 0 0 Loadings/well (lbs) 628,364 1,316,784 950,887 2,114,195 Total Loadings, Zero Discharge 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 628,364 1,316,784 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0 0 0 0 0 0						
Total Loadings, Discharge 0 0 0 0 Total Loadings, Zero Discharge 0 0 0 0 Onsite Injection (80%; 0%DWE) 0 0 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 No. wells, OBF 1 1 0 0 Loadings/well (lbs) 628,364 1,316,784 950,887 2,114,195 Total Loadings, Zero Discharge 628,364 1,316,784 0 0 Onsite Injection (80%; 0%DWE) 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0			-	_		
Total Loadings, Zero Discharge 0 0 0 0 Onsite Injection (80%; 0%DWE) 0 0 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 No. wells, OBF 1 1 0 0 Loadings/well (lbs) 628,364 1,316,784 950,887 2,114,195 Total Loadings, Zero Discharge 628,364 1,316,784 0 0 Onsite Injection (80%; 0%DWE) 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0		•		•		
Onsite Injection (80%; 0%DWE) 0 0 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 No. wells, OBF 1 1 1 0 0 Loadings/well (lbs) 628,364 1,316,784 950,887 2,114,195 Total Loadings, Zero Discharge 628,364 1,316,784 0 0 Onsite Injection (80%; 0%DWE) 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0		-	_			
No. wells, OBF 1 1 0 0 Loadings/well (lbs) 628,364 1,316,784 950,887 2,114,195 Total Loadings, Zero Discharge 628,364 1,316,784 0 0 Onsite Injection (80%; 0%DWE) 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 628,364 1,316,784 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0			-		_	
No. wells, OBF						
Loadings/well (lbs) 628,364 1,316,784 950,887 2,114,195 1,316,784 0 0 0 0 0 0 0 0 0	Onshore Disposal (20%; 100%DWE)	0	0	0	0	
Total Loadings, Zero Discharge 628,364 1,316,784 0 0 Onsite Injection (80%; 0%DWE) 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0	No. wells, OBF	1	1	0	0	
Onsite Injection (80%; 0%DWE) 628,364 1,316,784 0 0 Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0				950,887	2,114,195	
Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0	Total Loadings, Zero Discharge	628,364	1,316,784	0	0	1,945,1
Onshore Disposal (20%; 100%DWE) 0 0 0 0 Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0		000 004	4 240 704	0	0	4.045
Total Toxic Organics Discharge 0 0 0 0 Total Toxic Metals Discharge 0 0 0 0	Opeito Injection (800/ : 00/ DME)		1,310,784			1,945,1
Total Toxic Metals Discharge 0 0 0		·	0			
	Onshore Disposal (20%; 100%DWE)	0	-			
	Onshore Disposal (20%; 100%DWE) Total Toxic Organics Discharge	0	0	0	0	
Total Toxios Discribing	Onshore Disposal (20%; 100%DWE) Total Toxic Organics Discharge Total Toxic Metals Discharge	0 0 0	0	0 0	0 0	
Total Non-conventionals Discharge 0 0 0 0	Onshore Disposal (20%; 100%DWE) Total Toxic Organics Discharge	0	0	0	0	

California		BAT 2: Onshore [Disposal		
	Shallow Water (<1,000 ft)		Deep Water (>1,000	n ft\	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	0	0	. 0	0	0
Loadings/well (lbs)	16,100	33,739	24,364	54,170	_
Total Loadings, Zero Discharge	0	0	0	0	0
Total Loadings, Discharge Onsite Injection (80%; 0%DWE)	0	0	0	0	0
Onshore Disposal (20%; 100%DWE)	0	0	0	0	0
No. wells, OBF	1	1	0	0	2
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	628,364	1,316,784	0	0	1,945,148
Onsite Injection (80%; 0%DWE)	628,364	1,316,784	0	0	1,945,148
Onshore Disposal (20%; 100%DWE)	0	0	0	0	0
Total Toxic Organics Discharge	0.00	0	0	0	0
Total Toxic Metals Discharge	0	0	0	0	0
Total Toxics Discharge	0	0	0	0	0
Total Non-conventionals Discharge	0	0	0	0	0
	Shallow Water (<1,000 ft)	BAT 3: Onshore [Disposal Deep Water (>1,000 f	ft)	
	Development	Exploratory Exploratory	Deep Water (>1,000 f	Exploratory	Total
No. wells, SBF			Deep Water (>1,000		Total 0
No. wells, SBF Loadings/well (lbs)	Development	Exploratory Exploratory	Deep Water (>1,000 f	Exploratory	
	Development 0	Exploratory 0	Deep Water (>1,000 to Development 0	Exploratory 0	
Loadings/well (lbs)	Development 0 628,364	Exploratory 0	Deep Water (>1,000 to Development 0 950,887	Exploratory 0 2,114,195	0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE)	Development 0 628,364 0 0	1,316,784 0 0 0	Development 0 950,887 0 0	Exploratory 0 2,114,195 0 0	0 0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge	Development 0 628,364 0 0	Exploratory 0 1,316,784 0	Deep Water (>1,000 to Development 0 950,887 0 0	Exploratory 0 2,114,195 0 0	0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE) No. wells, OBF	Development 0 628,364 0 0 0 0 1	1,316,784 0 0 0 0 0	Development 0 950,887 0 0 0 0 0 0	Exploratory 0 2,114,195 0 0 0 0 0 0 0	0 0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE) No. wells, OBF Loadings/well (lbs)	Development 0 628,364 0 0 0 1 628,364	1,316,784 0 0 0 0 0 1 1,316,784	Development 0 950,887 0 0 950,887	Exploratory 0 2,114,195 0 0 0 0 0 2,114,195	0 0 0 0 2
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge	Development 0 628,364 0 0 0 1 628,364 628,364 628,364	Exploratory 0 1,316,784 0 0 1 1,316,784 1,316,784 1,316,784	Development 0 950,887 0 0 950,887 0 0 0 950,887	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0	0 0 0 0 0 2 1,945,148
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE) No. wells, OBF Loadings/well (lbs)	Development 0 628,364 0 0 0 1 628,364	1,316,784 0 0 0 0 0 1 1,316,784	Development 0 950,887 0 0 950,887	Exploratory 0 2,114,195 0 0 0 0 0 2,114,195	0 0 0 0 2
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge	Development 0 628,364 0 0 0 1 628,364 628,364 628,364	Exploratory 0 1,316,784 0 0 1 1,316,784 1,316,784 1,316,784	Development 0 950,887 0 0 950,887 0 0 0 950,887	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0	0 0 0 0 0 2 1,945,148
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE)	Development 0 628,364 0 0 0 1 628,364 628,364 628,364 628,364	1,316,784 0 0 0 1,316,784 1,316,784 1,316,784 1,316,784	Development 0 950,887 0 0 950,887 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0 0 2,114,195 0	0 0 0 0 0 2 1,945,148 1,945,148
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE)	Development 0 628,364 0 0 0 1 628,364 628,364 628,364 628,364	1,316,784 0 0 0 1,316,784 1,316,784 1,316,784 1,316,784	Development 0 950,887 0 0 950,887 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0 0 2,114,195 0	0 0 0 0 0 2 1,945,148 1,945,148

WORKSHEET 7:

Alaska: Zero Discharge Summary, Existing Sources

		Baseline: Zero Discl	narge Loadings		
	Shallow Water (Development		Deep Water Development	r (>1,000 ft) Exploratory	Total
No. wells, SBF	0	0	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	0	0	0	0	
Total Loadings, Zero Discharge	0	0	0	0	
Onsite Injection (100%)	0	0	0	0	
Onshore Disposal (0%)	0	0	0	0	
No. wells, OBF	1	1	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	628,364	1,316,784	0	0	1,945,14
Onsite Injection (100%)	628,364	1,316,784	0	0	1,945,14
Onshore Disposal (0%)	0	0	0	0	
Total Toxic Organics Discharge	0	0	0	0	
Total Toxic Metals Discharge Total Toxics Discharge	0	0	0	0	
Total Non-conventionals Discharge	0	0	0	0	
	Shallow Water (<1,000 ft)	SAT 1: Zero Discharg	e Loadings Deep Water (>1,000 f	; 4)	
	Development	Exploratory	Development	Ermite and terminal	
		, , , , ,		Exploratory	Total
No. wells, SBF	1	0	0	Exploratory 0	Total
Loadings/well (lbs)	1 552,796		·		
Loadings/well (lbs) Total Loadings, Discharge	552,796 552,796	0 1,158,426 0	0 836,532 0	0 1,859,939 0	
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge	552,796 552,796 0	0 1,158,426 0 0	0 836,532 0 0	0 1,859,939 0 0	
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%)	552,796 552,796 0	0 1,158,426 0 0	0 836,532 0 0	0 1,859,939 0 0	
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge	552,796 552,796 0	0 1,158,426 0 0	0 836,532 0 0	0 1,859,939 0 0	
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%)	552,796 552,796 0 0	0 1,158,426 0 0 0	0 836,532 0 0	0 1,859,939 0 0	
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF	552,796 552,796 0 0	0 1,158,426 0 0 0	0 836,532 0 0 0	0 1,859,939 0 0 0	
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs)	552,796 552,796 0 0 0 0 628,364	0 1,158,426 0 0 0 0 1 1,316,784	0 836,532 0 0 0 0	0 1,859,939 0 0 0 0	552,79
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF	552,796 552,796 0 0	0 1,158,426 0 0 0	0 836,532 0 0 0	0 1,859,939 0 0 0	552,7
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs)	552,796 552,796 0 0 0 0 628,364	0 1,158,426 0 0 0 0 1 1,316,784	0 836,532 0 0 0 0	0 1,859,939 0 0 0 0	552,7 ²
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%)	552,796 552,796 0 0 0 0 0 628,364 0	0 1,158,426 0 0 0 0 1 1,316,784 1,316,784	0 836,532 0 0 0 0 0 0 950,887	0 1,859,939 0 0 0 0 0 2,114,195 0	552,7 1,316,7
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) Total Toxic Organics Discharge	552,796 552,796 0 0 0 0 0 628,364 0	0 1,158,426 0 0 0 0 0 1 1,316,784 1,316,784 1,316,784	0 836,532 0 0 0 0 0 950,887 0	0 1,859,939 0 0 0 0 0 2,114,195 0	552,7 1,316,7
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) Total Toxic Organics Discharge Total Toxic Metals Discharge	552,796 552,796 0 0 0 0 0 628,364 0 0	0 1,158,426 0 0 0 0 0 1 1,316,784 1,316,784 1,316,784	0 836,532 0 0 0 0 0 950,887 0	0 1,859,939 0 0 0 0 0 2,114,195 0 0	552,79 1,316,78
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) Total Toxic Organics Discharge	552,796 552,796 0 0 0 0 0 628,364 0	0 1,158,426 0 0 0 0 0 1 1,316,784 1,316,784 1,316,784	0 836,532 0 0 0 0 0 950,887 0	0 1,859,939 0 0 0 0 0 2,114,195 0	Total 552,79

Alaska		BAT 2: Onshore I	Disposal		
Onshore Disposal	Shallow Water (<1,000 ft)		Deep Water (>1,000	D ft)	
<u> </u>	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	1	0	0	0	1
Loadings/well (lbs)	16,100	33,739	24,364	54,170	16 100
Total Loadings, Zero Discharge Total Loadings, Discharge	16,100 536,696	0	0	0	16,100 536,696
Onsite Injection (100%)	16,100	0	0	0	16,100
Onshore Disposal (0%)	0	0	0	0	0
No. wells, OBF	0	1	0	0	1
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Londings Zara Dischause		4 240 704	0	0	4 040 704
Total Loadings, Zero Discharge Onsite Injection (100%)	0	1,316,784 1,316,784	0	0	1,316,784 1,316,784
Onshore Disposal (0%)	0	1,310,764	0	0	1,510,704
Total Toxic Organics Discharge	0.31	0	0	0	0
Total Toxic Metals Discharge	8	0	0	0	8
Total Toxics Discharge Total Toxics Discharge	8	0	0	0	8
Total Non-conventionals Discharge	8,971	0	0	0	8,971
	Shallow Water (<1.000 ft)	BAT 3: Onshore I		ft)	
	Shallow Water (<1,000 ft) Development		Disposal Deep Water (>1,000	ft) Exploratory	Total
No. wells, SBF			Deep Water (>1,000		
No. wells, SBF Loadings/well (lbs)	Development	Exploratory Exploratory	Deep Water (>1,000 to Development	Exploratory	
	Development 0	Exploratory 0	Development 0	Exploratory 0	C
Loadings/well (lbs)	Development 0 628,364	Exploratory 0 1,316,784	Development 0 950,887	Exploratory 0 2,114,195	0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge	Development 0 628,364 0 0	Exploratory 0 1,316,784 0	Development 0 950,887 0	Exploratory 0 2,114,195 0 0	0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%)	Development 0 628,364 0 0	Exploratory 0 1,316,784 0 0	Development 0 950,887 0 0	Exploratory 0 2,114,195 0 0	0 0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge	Development 0 628,364 0 0	Exploratory 0 1,316,784 0	Development 0 950,887 0	Exploratory 0 2,114,195 0 0	0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%)	Development 0 628,364 0 0	Exploratory 0 1,316,784 0 0	Development 0 950,887 0 0	Exploratory 0 2,114,195 0 0	0 0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs)	Development 0 628,364 0 0 0	Exploratory 0 1,316,784 0 0 0	Development 0 950,887 0 0 0 0	Exploratory 0 2,114,195 0 0 0 0	0 0 0
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge	Development 0 628,364 0 0 0 1 628,364 628,364 628,364	Exploratory 0 1,316,784 0 0 0 1,316,784 1,316,784 1,316,784	Deep Water (>1,000 Development	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0	0 0 0 0 2 1,945,148
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs)	Development 0 628,364 0 0 0 1 628,364	Exploratory 0 1,316,784 0 0 0 1,316,784	Development 0 950,887 0 0 0 950,887	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0	0 0 0 0 2 1,945,148
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge	Development 0 628,364 0 0 0 1 628,364 628,364 628,364	Exploratory 0 1,316,784 0 0 0 1,316,784 1,316,784 1,316,784	Deep Water (>1,000 Development	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0	0 0 0 0 0 2
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (100%)	Development 0 628,364 0 0 0 1 628,364 628,364 628,364	Exploratory 0 1,316,784 0 0 0 1,316,784 1,316,784 1,316,784 1,316,784	Deep Water (>1,000 Development	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0 0 2,114,195 0	0 0 0 0 0 2 1,945,148 1,945,148
Loadings/well (lbs) Total Loadings, Discharge Total Loadings, Zero Discharge Onsite Injection (100%) Onshore Disposal (0%) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge	Development 0 628,364 0 0 0 1 628,364 628,364 628,364	Exploratory 0 1,316,784 0 0 0 1,316,784 1,316,784 1,316,784	Deep Water (>1,000 Development	Exploratory 0 2,114,195 0 0 0 0 2,114,195 0	C C C C C C C C C C C C C C C C C C C

WORKSHEET 8:

Total Non-conventionals Discharge

Gulf of Mexico: Zero Discharge Summary, New Sources

		Baseline: Zero Disch	arge Loadings		
	Shallow Wat		Deep Water	(>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	5	0	15	0	20
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	3,141,820	0	14,263,307	0	17,405,127
Total Wells, Zero Discharge	0	0	0	0	0
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	0	0	0	0	0
No. wells, OBF	2	0	0	0	2
	000 004	4 040 704	050.007	0.444.405	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	1,256,728	0	0	0	1,256,728
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D) Total Toxic Organics Discharge	1,256,728 5	0	15	0	1,256,728 20
Total Toxic Organics Discharge Total Toxic Metals Discharge	124	0	371	0	494
Total Toxics Discharge	129	0	386	0	514
otal Non-conventionals Discharge	144,175	0	432,526	0	576,701
	Shallow Wat	er (<1,000 ft)	Deep Water	(>1,000 ft)	
					Total
	Shallow Wat	er (<1,000 ft) Exploratory	Deep Water Development	(>1,000 ft) Exploratory	Total
No. wells. SBF	Development	Exploratory	Development	Exploratory	
No. wells, SBF Loadings/well (lbs)					Total 24
No. wells, SBF Loadings/well (lbs) Total Loadings, Discharge	Development 8	Exploratory 0	Development	Exploratory 0	
Loadings/well (lbs)	Development 8 552,796	Exploratory 0 1,158,426	Development 16 836,532	Exploratory 0 1,859,939	24
Loadings/well (lbs) Total Loadings, Discharge	8 552,796 4,422,370	0 1,158,426 0	16 836,532 13,384,517	0 1,859,939 0	24 17,806,886
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D)	8 552,796 4,422,370 0	0 1,158,426 0 0	16 836,532 13,384,517 0	0 1,859,939 0 0	24 17,806,886 0
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) laul/Onshore Disposal (80%S:100%D)	8 552,796 4,422,370 0	0 1,158,426 0 0	16 836,532 13,384,517 0	0 1,859,939 0 0	24 17,806,886 0
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) laul/Onshore Disposal (80%S:100%D) No. wells, OBF	8 552,796 4,422,370 0 0	0 1,158,426 0 0 0	16 836,532 13,384,517 0 0	0 1,859,939 0 0 0	24 17,806,886 0 0
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) aul/Onshore Disposal (80%S:100%D)	8 552,796 4,422,370 0 0	0 1,158,426 0 0 0	16 836,532 13,384,517 0	0 1,859,939 0 0 0	24 17,806,886 0 0
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) laul/Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge	8 552,796 4,422,370 0 0 1 628,364	0 1,158,426 0 0 0 0	16 836,532 13,384,517 0 0 0	0 1,859,939 0 0 0 0 2,114,195	24 17,806,886 0 0 0
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) laul/Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S:0%D)	8 552,796 4,422,370 0 0 1 628,364 628,364	0 1,158,426 0 0 0 0 0 1,316,784	16 836,532 13,384,517 0 0 0 950,887 0	0 1,859,939 0 0 0 0 2,114,195 0	24 17,806,886 0 0 0 1 1 628,364
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) Haul/Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S:0%D)	Development 8 552,796 4,422,370 0 0 1 628,364 628,364 0	0 1,158,426 0 0 0 0 1,316,784 0	16 836,532 13,384,517 0 0 0 950,887 0	0 1,859,939 0 0 0 0 2,114,195 0	24 17,806,886 0 0 0 1 1 628,364
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) Haul/Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S:0%D) Haul/Onshore Disposal (80%S:100%D) Total Toxic Organics Discharge Total Toxic Metals Discharge	Development 8 552,796 4,422,370 0 0 0 1 628,364 628,364 0 628,364 3 67	0 1,158,426 0 0 0 0 1,316,784 0	Development 16 836,532 13,384,517 0 0 0 950,887 0 0 0 5 134	0 1,859,939 0 0 0 0 2,114,195 0	24 17,806,886 0 0 0 1 628,364 0 628,364 8 201
Loadings/well (lbs) Total Loadings, Discharge Total Wells, Zero Discharge Onsite Injection (20%S:0%D) Haul/Onshore Disposal (80%S:100%D) No. wells, OBF Loadings/well (lbs) Total Loadings, Zero Discharge Onsite Injection (20%S:0%D) Haul/Onshore Disposal (80%S:100%D) Total Toxic Organics Discharge	Development 8 552,796 4,422,370 0 0 0 1 628,364 628,364 0 628,364 3	0 1,158,426 0 0 0 0 1,316,784 0	Development 16 836,532 13,384,517 0 0 0 950,887 0 0 0 5	0 1,859,939 0 0 0 0 2,114,195 0	24 17,806,886 0 0 0 1 628,364 0 628,364

78,055

0

156,109

0

234,164

Gulf of Mexico NSPS 2	Shallow Water (<1,000 ft)		Shallow Water (<1,000 ft)		Deep Water	Deep Water (>1,000 ft)		
Onshore Disposal	Development	Exploratory	Development	Exploratory	Total			
No. wells, SBF	8	0	16	0	24			
Loadings/well (lbs)	16,100	33,739	24,364	54,170				
Total Loadings, Zero Discharge	128,800	0	389,818	0	518,618			
Total Loadings, Discharge	4,293,570	0	12,994,698	0	17,288,268			
Onsite Injection (0%S: 0%D)	0	0	0	0	0			
Onshore Disposal (100%S:100%D)	128,800	0	389,818	0	518,618			
No. wells, OBF	1	0	0	0	1			
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195				
Total Loadings, Zero Discharge	628,364	0	0	0	628,364			
Onsite Injection (20%S: 0%D)	0	0	0	0	0			
Onshore Disposal (80%S:100%D)	628,364	0	0	0	628,364			
Total Toxic Organics Discharge	2.50	0	5	0	8			
Total Toxic Metals Discharge	62	0	123	0	185			
Total Toxics Discharge	64	0	128	0	192			
Total Non-conventionals Discharge	71,768	0	143,535	0	215,303			

NSPS 3: Zero Discharge
Shallow Water (<1.000 ft)
Deep Water (>1.000 ft)

	Snallow water (<1,000 ft)		Deep water		
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	0	0	3	0	3
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	0	0	2,852,661	0	2,852,661
Total Loadings Discharge	0	0	0	0	0
. otal 200alingo 2.00 kango	Ů	Ů	ŭ	ŭ	Ü
Onsite Injection (20%S: 0%D)	0	0	950,887	0	950,887
2 1 21 1/22/2 /22/2					
Onshore Disposal (80%S:100%D)	0	0	1,901,774	0	1,901,774
No. wells, OBF	7	0	8	0	15
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	13
Total Loadings, Zero Discharge	4,398,548	0	7,607,097	0	12,005,645
Onsite Injection (20%S: 0%D)	628,364	0	1,901,774	0	2,530,138
Onshore Disposal (80%S:100%D)	3,770,184	0	5,705,323	0	9,475,507
Total SBF+OBF Zero Discharge Loadings:					
Total Zero Disharge Injection Loadings	628,364	0	2,852,661	0	3,481,025
Total Zero Discharge Onshore Loadings	3,770,184	0	7,607,097	0	11,377,281

WORKSHEET 9:

California: Zero Discharge	Summary, Ne	w Sources			
_		Baseline: Zero Disch			
	Shallow Wat Development	ter (<1,000 ft) Exploratory	Deep Water Development	(>1,000 ft) Exploratory	Total
No. wells, SBF	0	0	0	0	C
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	0	0	0	0	C
Total Loadings, Zero Discharge	0	0	0	0	(
Onsite Injection (80%; 0%DWE)	0	0	0	0	C
Onshore Disposal (20%; 100%DWE)	0	0	0	0	C
No. wells, OBF	0	0	0	0	(
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	0	0	0	0	C
Onsite Injection (80%; 0%DWE)	0	0	0	0	(
Onshore Disposal (20%; 100%DWE)	0	0	0	0	(
Total Toxic Organics Discharge	0	0	0	0	(
Total Toxic Metals Discharge	0	0	0	0	(
Total Toxics Discharge	0	0	0	0	(
Total Non-conventionals Discharge	0	0	0	0	(
-		NSPS 1: Zero Disch	arge		
	Shallow Wat	ter (<1,000 ft)	Deep Water	(>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
				-	

	Shallow Wat	er (<1,000 ft)	Deep Water		
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	0	0	0	0	0
Loadings/well (lbs) Total Loadings, Discharge	552,796 0	1,158,426 0	836,532 0	1,859,939 0	0
Total Loadings, Zero Discharge	0	0	0	0	
Onsite Injection (80%; 0%DWE)	0	0	0	0	0
Onshore Disposal (20%; 100%DWE)	0	0	0	0	0
No. wells, OBF Loadings/well (lbs)	0 628,364	0 1,316,784	0 950,887	0 2,114,195	0
Total Loadings, Zero Discharge	0	0	0	0	0
Onsite Injection (80%; 0%DWE)	0	0	0	0	0
Onshore Disposal (20%; 100%DWE) Total Toxic Organics Discharge	0	0	0	0	0
Total Toxic Organics Discharge Total Toxic Metals Discharge	0	0	0	0	0
Total Toxics Discharge	0	0	0	0	0
Total Non-conventionals Discharge	0	0	0	0	0

California NSPS 2	Shallow Water (<1,000 ft)		Deep Water	Deep Water (>1,000 ft)		
	Development	Exploratory	Development	Exploratory	Total	
No. wells, SBF	0	0	0	0	0	
Loadings/well (lbs)	16,100	33,739	24,364	54,170		
Total Loadings, Zero Discharge	0	0	0	0	0	
Total Loadings, Discharge	0	0	0	0	0	
Onsite Injection (80%; 0%DWE)	0	0	0	0	0	
Onshore Disposal (20%; 100%DWE)	0	0	0	0	0	
No. wells, OBF	0	0	0	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195		
Total Loadings, Zero Discharge	0	0	0	0	0	
Onsite Injection (80%; 0%DWE) Onshore Disposal (20%; 100%DWE)	0	0	0	0	0	
Total Toxic Organics Discharge	0.00	0	0	0	0	
Total Toxic Metals Discharge	0.00	0	0	0	0	
l	0	-	0	0	0	
Total Toxics Discharge	0	0	0	0	0	
Total Non-conventionals Discharge	U	U	U	U	U	

NSPS 3: Zero Discharge

	Shallow Water (<1,000 ft)		Deep Water	(>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	0	0	0	0	0
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	0	0	0	0	0
Total Loadings Discharge	0	0	0	0	0
Onsite Injection (80%; 0%DWE)	0	0	0	0	0
Onshore Disposal (20%; 100%DWE)	0	0	0	0	0
No. wells, OBF	0	0	0	0	0
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	0	0	0	0	0
Onsite Injection (80%; 0%DWE)	0	0	0	0	0
Onshore Disposal (20%; 100%DWE)	0	0	0	0	0

Total SBF+OBF Zero Discharge Loadings:					
Total Zero Disharge Injection Loadings	0	0	0	0	0
Total Zero Discharge Onshore Loadings	0	0	0	0	0

WORKSHEET 10:

<u>-</u>		Baseline: Zero Disch			
	Shallow Water		Deep Water		Taral
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	0	0	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	0	0	0	0	
Total Loadings, Zero Discharge	0	0	0	0	
Onsite Injection (100%)	0	0	0	0	
Onshore Disposal (0%)	0	0	0	0	
No. wells, OBF	0	0	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	0	0	0	0	
Onsite Injection (100%)	0	0	0	0	
Onshore Disposal (0%)	0	0	0	0	
Total Toxic Organics Discharge	0	0	0	0	
Total Toxic Metals Discharge	0	0	0	0	
Total Toxics Discharge	0	0	0	0	
otal Non-conventionals Discharge	0	0	0	0	
-	ı	NSPS 1: Zero Discha	arge		
	Shallow Water	er (<1,000 ft)	Deep Water	(>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
				0	
No. wells, SBF	0	0	0	0	
Loadings/well (lbs)	0 552,796	0 1,158,426	836,532	1,859,939	
Loadings/well (lbs) Total Loadings, Discharge	-	~	-	_	
Loadings/well (lbs)	552,796	1,158,426	836,532	1,859,939	
Loadings/well (lbs) Total Loadings, Discharge	552,796	1,158,426	836,532	1,859,939	

Alaska NSPS 2	Shallow Water (<1,000 ft)		Deep Water	Deep Water (>1,000 ft)		
Onshore Disposal	Development	Exploratory	Development	Exploratory	Total	
No. wells, SBF	0	0	0	0	0	
Loadings/well (lbs)	16,100	33,739	24,364	54,170		
Total Loadings, Zero Discharge	0	0	0	0	0	
Total Loadings, Discharge	0	0	0	0	0	
Onsite Injection (100%)	0	0	0	0		
Onshore Disposal (0%)	0	0	0	0	0	
No. wells, OBF	0	0	0	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195		
Total Loadings, Zero Discharge	0	0	0	0	0	
Onsite Injection (100%) Onshore Disposal (0%)	0	0	0	0	0	
Total Toxic Organics Discharge	0.00	0	0	0	0	
Total Toxic Metals Discharge	0	0	0	0	0	
Total Toxics Discharge	0	0	0	0	0	
Total Non-conventionals Discharge	0	0	0	0	0	

NSPS 3: Zero Discharge

	Shallow Wat	ter (<1,000 ft)	Deep Water	Deep Water (>1,000 ft)		
	Development	Exploratory	Development	Exploratory	Total	
No. wells, SBF	0	0	0	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195		
Total Loadings, Zero Discharge	0	0	0	0	0	
Total Loadings Discharge	0	0	0	0	0	
Onsite Injection (100%)	0	0	0	0	0	
Onshore Disposal (0%)	0	0	0	0	0	
No. wells, OBF	0	0	0	0	0	
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195		
Total Loadings, Zero Discharge	0	0	0	0	0	
Onsite Injection (100%)	0	0	0	0	0	
Onshore Disposal (0%)	0	0	0	0	0	

Total SBF+OBF Zero Discharge Loadings:					
Total Zero Disharge Injection Loadings	0	0	0	0	0
Total Zero Discharge Onshore Loadings	0	0	0	0	0

WORKSHEET No. 11:
POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: CONVENTIONAL POLLUTANTS FROM DISCHARGED CUTTINGS, EXISTING SOURCES

TANTS FROM DISCHARGED CUTTINGS		Shallow Well			Deep Well		Totals
entionals)	GOM	CA	AK	GOM	ĊA	AK	
DDD: Table XI-2, p XI-4)							
well depth, TD	10,559	7,607	10,633	13,037	10,082	12,354	
no. wells , total by region (from Exh. 2)	857	5	4	857	5	4	86
% WBF (total-OBF) wells discharging (from Exh. 1)	45.06%	51.25%	36.23%	36.80%	31.54%	44.31%	
no. wells discharging cuttings, by region	386	3	1	315	2	2	7
cuttings discharged , bbl per well	1,475	1,242	1,480	2,458	1,437	2,413	
CUTTINGS TSS ANALYSIS:							
lbs TSS / bbl (from Exh. 3)	551	551	551	551	551	551	
lbs TSS per well	812,209	683,907	814,962	1,353,498	791,284	1,328,718	
total lbs TSS	313,512,578	2,051,722	814,962	426,351,776	1,582,568	2,657,437	746,971,0
Gulf of Mexico							739,864,3
California							3,634,2
Alaska							3,472,3
total volume cuttings, bbl	569,350	3,726	1,480	774,270	2,874	4,826	1,356,5
Gulf of Mexico							1,343,6
California Alaska							6,6 6,3
7 Hadia							0,0
CUTTINGS OIL ANALYSIS:							
% wells , by type and region (from Exh. 1)	51.00%	58.00%	41.00%	49.00%	42.00%	59.00%	
total no. wells, by region (from Exh. 2)	857	5	4	857	5	4	8
(O.G. 115. 11510), 5) 10g(51. (11511/EATL 2)							
no. wells, by type and region	437	3	2	420	2	2	8
% wells using MO spot or lube & discharging (from Exh. 1)	10.41%	11.83%	8.37%	8.50%	7.28%	10.23%	_
no. wells using MO and discharging	45	-	-	36	-	-	
cuttings discharged per well, bbl	1,475	1,242	1,480	2,458	1,437	2,413	
fraction adherent fluid (from Exh. 3)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
volume adherent fluid, per well, bbl	74	62	74	123	72	121	
MO, lbs per bbl (from Exh. 3)	9	9	9	9	9	9	
MO, lbs per well	666	558	666	1,107	648	1,089	
total lbs MO	29,970	•	-	39,852	-	-	69,8
Gulf of Mexico				**,***			69,8
California							
Alaska							
total volume MO, bbl	3,330	-	-	4,428	-	-	7,7
Gulf of Mexico							7,7
California							•
Alaska							
TOTAL CONVENTIONAL POLLUTANTS			.,				
lbs conventional pollutants discharged	313,542,548	2,051,722	814,962	426,391,628	1,582,568	2,657,437	747,040,8
Gulf of Mexico							739,934,1
California							3,634,2
Alaska							3,472,3
		0.700	1,480	770.000	0.07.	4.000	4004
	F=0 0		1 480	778,698	2,874	4,826	1,364,2
bbl conventional pollutants discharged	572,680	3,726	1,700	,,,,,			
Gulf of Mexico	572,680	3,726	1,400	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,-	•	
	572,680	3,726	1,400	,			1,351,3 6,6 6,3

WORKSHEET No. 12:
POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: CONVENTIONAL POLLUTANTS FROM DISCHARGED DRILLING FLUID. EXISTING SOURCES

TANTS FROM DISCHARGED DRILLING FLUIDS		01			D W. II		T
ventionals)	GOM	Shallow Well CA	AK	GOM	Deep Well CA	AK	Totals
ODD: Table XI-2, p XI-4)	GOW	CA	AN	GOW	CA	AN	
well depth, TD (from Exh. 5A)	10,559	7,607	10,633	13,037	10,082	12,354	
no. wells , total (from Exh. 2)	857	7,607	10,655	857	10,062	12,354	866
no. wells discharging fluids (from Exh. 5A)	386	3	1	315	2	7	709
drilling fluids (bbl) per well	6,938	5,939	6,963	9,752		9,458	708
drilling lidids (bbi) per well	0,930	5,959	0,903	9,752	6,777	9,400	
WB FLUIDS TSS ANALYSIS:							
lbs TSS / bbl (from Exh. 3)	153	153	153	153	153	153	
lbs TSS per well	1,061,514	908,667	1,065,339	1,492,056	1,036,881	1,447,074	
total lbs TSS	409,744,404	2,726,001	1,065,339	469,997,640	2,073,762	2,894,148	888,501,294
Gulf of Mexico	409,744,404	2,720,001	1,005,555	409,337,040	2,013,102	2,034,140	879,742,044
California							4,799,763
Alaska							3,959,487
total volume, bbl, WB fluids	2,678,068	17,817	6,963	3,071,880	13,554	18,916	5,807,198
Gulf of Mexico		· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·		5,749,948
California							31,371
Alaska							25,879
WB FLUIDS OIL ANALYSIS:			Т			Г	
% wells using MO spot or lube, discharging (from Exh. 1)	10.41%	11.83%	8.37%	8.50%	7.28%	10.23%	
no. wells using MO and discharging (from Exh. 5A)	45	-	0.57 /6	36	7.2076	10.23 /6	81
no. Wells using MO and discharging (non Exh. 5A)	45	-	-	30	-	-	0
WB fluids discharged per well, bbl	6.030	5,939	6.063	9,752	6,777	9,458	
	6,938 9	5,939 9	6,963	9,752	9	9,430	ç
MO, lbs per bbl (from Exh. 3) MO, lbs per well	62,442	53,451	62,667	87,768	60,993	85,122	85,122
total lbs MO	2,809,890	33,431	02,007	3,159,648	60,993	05,122	5,969,538
Gulf of Mexico	2,009,090			3,139,040			5,969,538
California							5,969,538
Alaska							-
AldSkd							
total volume MO, bbl	9,421	_	_	10,593	_	_	20,014
Gulf of Mexico	423,935			381,363	-		805,299
California	425,955	_	_	301,303	_	_	-
Alaska							_
Aldoka							
TOTAL CONVENTIONAL POLLUTANTS:							
lbs conventional pollutants discharged	412,554,294	2,726,001	1,065,339	473,157,288	2,073,762	2,894,148	894,470,832
Gulf of Mexico	,	_,, _,,,,,,	1,000,000	,,	_,,	_,,	885,711,582
California							4,799,763
Alaska							3,959,487
bbl conventional pollutants discharged	2,687,489	17,817	6,963	3,082,473	13,554	18,916	5,827,212
Gulf of Mexico	2,001,409	11,011	0,903	3,002,413	13,334	10,910	5,769,962
California							31,371
Alaska							25,879
Avg GOM drilling fluid discharged, bbl/day (20-day drilling program)	347	297	348	488	339	473	
Avg adherent fluid (5%) on cuttings discharged GOM, bbl/day	4	3	4	6	4	6	
Total avg per well GOM drilling fluid discharged, bbl/day	351	300	352	494	342	479	2,318
no. wells discharging fluids	386		**-	315	* ·=	***	70
Total GOM drilling fluid discharges, bbl/day	135,327			155,530			290,856
Total Gold Gold drilling filling discharges polyday							

WORKSHEET No. 13:

POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: TOXIC/NON-CONVENTIONAL POLLUTANTS FROM DISCHARGED DRILLING FLUID, EXISTING SOURCES

ITANTS FROM DISCHARGED DRILLING FLUIDS s & Non-conventionals)	5	Shallow Well			Deep Well		Totals
CS	GOM	CA	AK	GOM	CA	AK	
ODD: Table XI-2, p XI-4)							
Well Depth, TD (from Exh. 5A)	10,559	7,607	10,633	13,037	10,082	12,354	
No. wells , total (from Exh. 2)	857	5	4	857	5	4	866
No. wells discharging cuttings (from Exh. 5A)	386	3	1	315	2	2	709
Drilling fluidsDischarged (bbl) per well	6,938	5,939	6,963	9,752	6,777	9,458	
WB FLUIDS TOXICS/NON-CONVENTIONALS:							
lbs toxics/non-conventionals/ bbl (from Exh. 3)	37.7	37.7	37.7	37.7	37.7	37.7	
lbs toxics/non-conventionals per well	261,629	223,957	262,572	367,744	255,558	356,657	
total lbs toxics/non-conventionals	100,988,785	671,871	262,572	115,839,265	511,115	713,314	218,986,922
Gulf of Mexico	,,	,-	- ,- ,	-,,	,	-,-	216,828,049
California							1,182,987
Alaska							975,886
total volume, bbl, WB fluids	2,678,068	17,817	6,963	3,071,880	13,554	18,916	5,807,198
Gulf of Mexico	_,	,	-,	2,22.1,222	,	,	5,749,948
California							31,371
Alaska							25,879
WB FLUIDS MINERAL OIL TOXICS/NON-CONVENTIONALS:							
% wells using MO spot or lube, discharging (from Exh. 1)	10.41%	11.83%	8.37%	8.50%	7.28%	10.23%	
no. wells using MO and discharging (from Exh. 5A)	45	-	-	36	-		81
WB fluids discharged per well, bbl	6,938	5,939	6,963	9,752	6,777	9,458	
mineral oil toxics, lb / bbl (from Exh. 3)	0.324	0.324	0.324	0.324	0.324	0.324	
mineral oil toxics, lbs / well	2,247	1,924	2,256	3,159	2,195	3,064	14,845
total lbs mineral oil toxics	101,134	-	-	113,722	-	-	214,856
Gulf of Mexico							214,856
California							· -
Alaska							-
TOTAL TOXIC/NON-CONVENTIONAL POLLUTANTS:							
lbs conventional pollutants discharged	101,089,918	671,871	262,572	115,952,987	511,115	713,314	219,201,778
Gulf of Mexico	,,	,	,	,,,-	,	,	217,042,905
							1,182,987
California							

WORKSHEET No. 14:
POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: CONVENTIONAL POLLUTANTS FROM DISCHARGED CUTTINGS, NEW SOURCES

LUTANTS FROM DISCHARGED CUTTINGS		Shallow Well			Deep Well		Totals
oventionals)	GOM	CA	AK	GOM	ČA	AK	
n ODD: Table XI-2, p XI-4)							
well depth, TD	10,559	7,607	10,633	13,037	10,082	12,354	
no. wells , total by region (from Exh. 2)	38	-	-	38	-	-	3
% WBF (total-OBF) wells discharging (from Exh. 1)	45.06%	51.25%	36.23%	36.80%	31.54%	44.31%	
no. wells discharging cuttings, by region	17	0	0	14	0	0	
cuttings discharged, bbl per well	1,475	1,242	1,480	2,458	1,437	2,413	
- Catalings alcoharged , but per won	1,470	1,272	1,400	2,400	1,407	2,410	
CUTTINGS TSS ANALYSIS:							
lbs TSS / bbl (from Exh. 3)	551	551	551	551	551	551	
lbs TSS per well	812,209	683,907	814,962	1,353,498	791,284	1,328,718	
total lbs TSS	13,807,549	003,907	0 14,902	18,948,968	791,204	1,320,718	32,756,5
Gulf of Mexico	13,807,349	U	U	10,940,900	U	U	32,756,5
							32,756,5
California							•
Alaska							
	05						
total volume cuttings, bbl	25,075	0	0	34,412	0	0	59,4
Gulf of Mexico							59,4
California							
Alaska							
				<u> </u>			
CUTTINGS OIL ANALYSIS:							
% wells , by type and region (from Exh. 1)	51.00%	58.00%	41.00%	49.00%	42.00%	59.00%	
total no. wells, by region (from Exh. 2)	38	-	-	38	-	-	
no. wells, by type and region	19	0	0	19	0	0	
% wells using MO spot or lube & discharging (from Exh. 1)	10.41%	11.83%	8.37%	8.50%	7.28%	10.23%	
no. wells using MO and discharging	2	0	0	2	0	0	
cuttings discharged per well, bbl	1,475	1,242	1,480	2,458	1,437	2,413	
fraction adherent fluid (from Exh. 3)	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
volume adherent fluid, per well, bbl	74	62	74	123	72	121	
MO, lbs per bbl (from Exh. 3)	9	9	9	9	9	9	
MO, lbs per well	666	558	666	1,107	648	1.089	
total lbs MO	1,332	0	0	2,214	0	0	3,5
Gulf of Mexico	1,002			2,217		• • • • • • • • • • • • • • • • • • • •	3,5
California							0,0
Alaska							
Alaska							
total volume MO, bbl	148	0	0	246	0	0	
Gulf of Mexico	140	<u>_</u>	<u>u</u>	240	<u> </u>	<u> </u>	,
California							`
							•
Alaska							
TOTAL COMPENSION SOURCE	-I					<u> </u>	
TOTAL CONVENTIONAL POLLUTANTS		0	0	18,951,182	0	0	20.760.6
lbs conventional pollutants discharged	13,808,881	0	0	18,951,182	0	0	32,760,0
Gulf of Mexico							32,760,0
California							
Alaska							
	05.000					- 1	
bbl conventional pollutants discharged	25,223	0	0	34,658	0	0	59,8
Gulf of Mexico							59,8
California							-
							_

WORKSHEET No. 15:
POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: CONVENTIONAL POLLUTANTS FROM DISCHARGED DRILLING FLUID, NEW SOURCES

NTS FROM DISCHARGED DRILLING FLUIDS onals)		Shallow Well			Deep Well		Totals
	GOM	CA	AK	GOM	CA	AK	
D: Table XI-2, p XI-4)							
well depth, TD (from Exh. 5A)	10,559	7,607	10,633	13,037	10,082	12,354	
no. wells , total (from Exh. 2)	38	-	-	38	-	-	38
no. wells discharging fluids (from Exh. 5A)	17	0	0	14	0	0	3
	6.938		U			U	ა
drilling fluids (bbl) per well	0,938	5,939	6,963	9,752	6,777	9,458	
WB FLUIDS TSS ANALYSIS:							
lbs TSS / bbl (from Exh. 3)	153	153	153	153	153	153	
lbs TSS per well	1,061,514	908,667	1,065,339	1,492,056	1,036,881	1,447,074	
total lbs TSS	18,045,738	· ·	1,000,009	20,888,784		1,447,074	20 024 522
	18,045,738	-	-	20,888,784	•	-	38,934,522
Gulf of Mexico							38,934,522
California							-
Alaska							-
total volume, bbl, WB fluids	117,946			136,528			254.474
Gulf of Mexico	117,940	-	-	130,328	•	-	254,474 254,474
California							254,474
							-
Alaska							
WB FLUIDS OIL ANALYSIS:							
% wells using MO spot or lube, discharging (from Exh. 1)	10.41%	11.83%	8.37%	8.50%	7.28%	10.23%	
no. wells using MO and discharging (from Exh. 5A)	2	-	-	2	-	-	
WB fluids discharged per well, bbl	6,938	5,939	6,963	9,752	6,777	9,458	
MO, lbs per bbl (from Exh. 3)	9	9	9	9	9	9	
MO, lbs per well	62,442	53,451	62,667	87,768	60,993	85,122	85,122
total lbs MO	124,884	-	02,007	175,536	-	00,122	300,420
Gulf of Mexico	124,004		- 1	173,330			300,420
							300,420
California							-
Alaska							-
total volume MO, bbl	419	-	_	589	_	_	1,007
Gulf of Mexico	837		-	1,177	-	-	2,014
California				.,			_,
Alaska							_
Aldona							
TOTAL CONVENTIONAL POLLUTANTS: Ibs conventional pollutants discharged	18,170,622	_		21,064,320	_	_	39,234,942
	10,110,022	=	-	21,007,020	=	=	
Gulf of Mexico							39,234,942
California							-
Alaska							-
bbl conventional pollutants discharged	118,365	_	_	137,117	_	-	255,481
Gulf of Mexico	110,000			101,111			255,481
California							255,401
							-
Alaska							
Avg GOM drilling fluid discharged, bbl/day (20-day drilling program)	347	297	348	488	339	473	
Avg adherent fluid (5%) on cuttings discharged GOM, bbl/day	-	-	-	-	-	-	
Total avg per well GOM drilling fluid discharged, bbl/day	347	297	348	488	339	473	2,291
no. wells discharging fluids	17			14			3
Total GOM drilling fluid discharges, bbl/day	5,897			6,826			12,724
	-,			-,0			410

WORKSHEET No. 16:
POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: TOXIC/NON-CONVENTIONAL POLLUTANTS FROM DISCHAREGD DRILLING FLUID, NEW SOURCES

s & Non-conventionals)		Shallow Well			Deep Well		Totals
CS	GOM	CA	AK	GOM	CA	AK	
ODD: Table XI-2, p XI-4)							
Well Depth, TD (from Exh. 5A)	10,559	7,607	10,633	13,037	10,082	12,354	
No. wells , total (from Exh. 2)	38	-	-	38	-	-	38
No. wells discharging cuttings (from Exh. 5A)	17	0	0	14	0	0	3′
Drilling fluidsDischarged (bbl) per well	6,938	5,939	6,963	9,752	6,777	9,458	
WB FLUIDS TOXICS/NON-CONVENTIONALS:							
lbs toxics/non-conventionals/ bbl (from Exh. 3)	37.7	37.7	37.7	37.7	37.7	37.7	
lbs toxics/non-conventionals per well	261,629	223,957	262,572	367,744	255,558	356,657	
total lbs toxics/non-conventionals	4,447,693	-	-	5,148,412	-	-	9,596,104
Gulf of Mexico							9,596,104
California							-
Alaska							-
total volume, bbl, WB fluids	117,946	-	-	136,528	-	-	254,474
Gulf of Mexico							254,474
California							-
Alaska							-
WB FLUIDS MINERAL OIL TOXICS/NON-CONVENTIONALS:							
% wells using MO spot or lube, discharging (from Exh. 1)	0	0	0	0	0	0	
no. wells using MO and discharging (from Exh. 5A)	2	-	-	2	-	-	4
WB fluids discharged per well, bbl	6,938	5,939	6,963	9,752	6,777	9,458	
mineral oil toxics, lb / bbl (from Exh. 3)	0.324	0.324	0.324	0.324	0.324	0.324	
mineral oil toxics, lbs / well	2,247	1,924	2,256	3,159	2,195	3,064	14,845
total lbs mineral oil toxics	4,495	-	-	6,318	-	-	10,813
Gulf of Mexico	· ·		•			•	10,813
California							-
Alaska							-
TOTAL TOXIC/NON-CONVENTIONAL POLLUTAN				E 4E4 700			0.000.047
lbs conventional pollutants discharged	4,452,187	-	-	5,154,730	-	-	9,606,917
Gulf of Mexico							9,606,917
California							-
Alaska							-

APPENDIX VIII-5

Pollutant Loadings (Removals) Supporting Worksheets

WORKSHEET A:

Formation Oil Contamination:

Input Data for Model Wells -- Base Fluid Retention and Drill Cuttings Volume Calculations, Synthetic-based Fluid Analyses

Densities for SBF Components and Drill Cuttings:

SBF Base fluid (lbs/bbl):	280.0
SBF Barite (lbs/bbl):	1,506.0
SBF Water (lbs/bbl):	350.5
Dry Formation Cuttings (lbs/bbl):	910.0
Formation Oil (as diesel) (lbs/bbl):	294.0
SBF Fraction Data: Basefluid Fraction of Standard SBF (wt./wt.): Barite Fraction of Standard SBF (wt./wt.): Water Fraction of Standard SBF (wt./wt.):	47% 33% 20%
SBF Formulation Density (lbs./gal.):	9.65
Model Well Volume Data:	
Shallow Water, Exploratory (barrels):	1,184.0
Deep Water, Exploratory (barrels):	1,901.0
Shallow Water, Development (barrels):	565.0
Deep Water, Development (barrels):	855.0

Base Fluid Fraction of Wet Cuttings (W/W)	for Solids Control Equipment:
Primary Shale Shakers:	9.32%
Secondary Shale Shakers:	13.80%
Cuttings Dryer:	3.82%
Fines Removal Unit:	10.70%

Fraction of Total Wet Cuttings Discharge (V/V) for SolidsControl Equipment Various BPT and BAT/NSPS Options:

BPT	Primary Shale Shakers:	78.5%
	Secondary Shale Shakers:	18.5%
	Fines Removal Unit:	3.0%
BAT/NSPS Option 1	Cuttings Dryer:	97.0%
·	Fines Removal Unit:	3.0%
BAT/NSPS Option 2	Cuttings Dryer:	100.0%

Base Fluid Fraction of Discharged Wet Cuttings (W/W) for BAT/NSPS Options:

BPT:	10.20%
BAT/NSPS Option 1 (Two Discharges):	4.03%
BAT/NSPS Option 2 (One Discharge):	3.82%

Equations Used to Calculate Loadings

Total Cuttings Waste Discharged (lbs) = (DC)/(1-(1/SF)*CRN) SBF Basefluid Discharged (lbs) = CRN * TW

SBF Water Discharged (lbs) = (WF/SF)*(CRN *TW)
SBF Barite Discharged (lbs) = (BF/SF)*(CRN *TW)

where:

TW = Total Cuttings Waste Discharged (lbs)
DC = Dry Drill Cuttings Discharged (lbs)

CRN = SBF Basefluid Fraction on TW (Cuttings Retention Number) (wt./wt.)

SF = SBF Basefluid Fraction (wt./wt.) in Drilling Fluid Formulation
WF = SBF Water Fraction (wt./wt.) in Drilling Fluid Formulation
BF = SBF Barite Fraction (wt./wt.) in Drilling Fluid Formulation

SBFV = Whole Synthetic Based Fluid Volume

Notes:

0.20%

- * Assume SF + WF + BF = 1
- * DC is calculated from model well size
- * SBFV is the sum total of SBF basefluid, barite, and water (in bbl) discharged
- * Total Cuttings Waste Discharged in BAT/NSPS Option 2 is equivalent to the volume fraction of total cuttings waste discharged from cuttings dryer multiplied against the total cuttings waste calculated in BAT/NSPS Option 1
- * Total Cuttings Waste Not Discharged in BAT/NSPS Option 2 is equivalent to the volume fraction of total cuttings waste discharged from the fines removal unit (FRU) multiplied against the total cuttings waste calculated in BAT/NSPS Option 1
- * Dry Drill Cuttings Discharged in BAT/NSPS Option 2 is equivalent to the arithmetric difference between the BAT/NSPS Option 2 Total Cuttings Waste Discharged and the BAT/NSPS Option 2 SBF (Basefluid, Barite, Water) Discharged
- * Dry Drill Cuttings Not Discharged in BAT/NSPS Option 2 is equivalent to the arithmetric difference between the BAT/NSPS Option 2 Total Cuttings Waste Not Discharged and the BAT/NSPS Option 2 SBF (Basefluid, Barite, Water) Not Discharged

		% Wells/region	No lube	No spot	Proj'd Tox /	Proj'd %	Proj'd %	Sum lubes
		Shallow/deep	/lube	/spot	Sheen Limit	Wells Fail	Wells Pass	spot(s), or
If of Mexico		% split	% split	% split	Failure Rate	Permit Lim	Permit Lim	that Pas
shallow	(51% GOM wells)							
shallow, no lube	(51% * 88% all wells) =	=	44.88%					
shallow, no lube, no spot		=		35.01%	1.0%	0.350%	34.66%	
shallow, no lube, + spot shallow, + lube	(44.88% * 22% all wells need spot) = (51% * 12% all wells) =		6.12%	9.87%	33.0%	3.258%	6.62%	•
shallow, + lube, no spot	(6.12% * 78% all wells do not use spot)		0.12/0	4.77%	33.0%	1.575%	3.20%	
shallow, + lube, + spot				1.35%	56.0%	0.754%	0.59%	
total % shallow wells	(0.1270 2270 dii Wollo Hood Spot)			1.0070	00.070	5.940%	45.06%	
deep	(49% GOM wells) =	= 49.00%						-
deep, OBF (no discharge)	(15% of deep wells) =				100%	7.35%	0.00%	1
deep, WBF (discharge)	(85% of deep wells) =							
deep, no lube	(49% * 88% all wells) =		36.65%					
deep, no lube, no spot	(43.12% * 78% all wells do not use spot)			28.59%	1.0%	0.286%	28.30%	
deep, no lube, + spot	(43.12% * 22% all wells need spot) =		F 000/	8.06%	33.0%	2.661%	5.40%	•
deep, + lube deep, + lube, no spot	(49% * 12% all wells) = (6.12% * 78% all wells do not use spot) =		5.00%	3.90%	33.0%	1.286%	2.61%	
deep, + lube, + spot	(6.12% * 22% all wells need spot)			1.10%	56.0%	0.616%	0.48%	
total % deep wells	(0.1.270 2270 dir Hollo Hood opoly		41.65%	41.65%	00.070	12.20%	36.80%	_
								_
M								
ifornia shallow	(58% CA wells) =	= 58.00%						
shallow, no lube	(58% * 88% all wells) =	_	51.04%					
shallow, no lube, no spot	(51.04% * 78% all wells do not use spot) =			39.81%	1.0%	0.398%	39.41%	,
shallow, no lube, + spot	(51.04% * 22% all wells need spot) =			11.23%	33.0%	3.706%	7.52%	,
shallow, + lube	(58% * 12% all wells) =		6.96%					
shallow, + lube, no spot	(6.96% * 78% all wells do not use spot)	=		5.43%	33.0%	1.792%	3.64%	
shallow, + lube, + spot	(6.96% * 22% all wells need spot) =	=		1.53%	56.0%	0.857%	0.67%	
total % shallow wells deep	(42% CA wells) =	= 42.00%				6.753%	51.25%	<u>-</u>
deep, OBF (no discharge)	(15% of deep wells) =				100%	6.30%	0.00%	
deep, WBF (discharge)	(85% of deep wells) =				10070	0.0070	0.0070	
deep, no lube	(42% * 88% all wells)		31.42%					
deep, no lube, no spot	(36.96% * 78% all wells do not use spot) =	=		24.50%	1.0%	0.245%	24.26%	,
deep, no lube, + spot	(36.96% * 22% all wells need spot) =			6.91%	33.0%	2.281%	4.63%	1
deep, + lube	(42% * 12% all wells) =		4.28%					
deep, + lube, no spot		=		3.34%	33.0%	1.103%	2.24%	
deep, + lube, + spot	(3.93% * 22% all wells need spot) =	=	05.700/	0.94%	56.0%	0.528%	0.41%	_
total % deep wells			35.70%	35.70%		10.46%	31.54%	<u>-</u>
ıska								
shallow	(41% AK wells) =							
shallow, no lube	(41% * 88% all wells) =		36.08%					
shallow, no lube, no spot shallow, no lube, + spot	(36.08% * 78% all wells do not use spot) = (36.08% * 22% all wells need spot) =			28.14% 7.94%	1.0% 33.0%	0.281% 2.619%	27.86% 5.32%	
Silallow, no lube, + spot	(30.00% 22% all wells field spot)			7.5470	33.070	2.01370	3.32 /	,
shallow, + lube	(41% * 12% all wells)	_	4.92%					
shallow, + lube, no spot	(4.92% * 78% all wells do not use spot)	=		3.84%	33.0%	1.266%	2.57%	1
shallow, + lube, + spot	(4.92% * 22% all wells need spot) =	=		1.08%	56.0%	0.606%	0.48%	8.3
total % shallow wells					-	4.773%	36.23%	<u>-</u>
4	(FOO(ALC II-)	F0 000/						
deep, OBF (no discharge)	(59% AK wells) = (15% of deep wells) =				100%	8.85%	0.00%	
deep, WBF (discharge)	(85% of deep wells) =				100%	0.00%	0.00%	,
deep, no lube	(59% * 88% all wells) =		44.13%					
deep, no lube, no spot	· · · · · · · · · · · · · · · · · · ·	=		34.42%	1.0%	0.344%	34.08%	,
deep, no lube, + spot	(51.92% * 22% all wells need spot) =			9.71%	33.0%	3.204%	6.51%	
deep, + lube	(59% * 12% all wells) =		6.02%					
deep, + lube, no spot	(7.08% * 78% all wells do not use spot)			4.69%	33.0%	1.549%	3.15%	
deep, + lube, + spot	(7.08% * 22% all wells need spot) =	=		1.32%	56.0%	0.741%	0.58%	
total % deep wells			50.15%	50.15%		14.69%	44.31%	

⁽a) Percentage Distribution of Water-based Drilling Fluid Types, (no oil, +MO lube, +MO spot, or +MO lube & spot)
(b) Cells shaded in blue are data input from ODD: Table XI-10, p XI-17; other percentages shown are derived from these input values)
(c) The terms "shallow" and "deep" as used in the offshore effluent limitaiton guideline do NOT have the same meaning as the same terms as used in the synthetics effluent guideline; these terms in the offshore rule refers to the relative target depth of the well, whereas in the synthetics rule they refer to the water depth in which operations occur.

WORKSHEET No. C: POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: WELL DEPTHS AND VOLUMES OF DISCHARGED CUTTINGS AND DRILLING FLUIDS

		GOM	CA	AK	GOM	CA	AK
			Shallow Well			Deep Well	
(from ODD: Table XI-2, p XI-4)	well depth, TD	10,559	7,607	10,633	13,037	10,082	12,354
	cuttings discharged , bbl per well	1,475	1,242	1,480	2,458	1,437	2,413
(from ODD: Table XI-2, p XI-4)	drilling fluids (bbl) per well	6,938	5,939	6,963	9,752	6,777	9,458

Current Well Counts, SBF Effluent Limitations Guideline (see "Well Count Input Sheet," this file)

			EXISTING S							
Est'd % WBF > SBF		GOM	CA	AK	Subtotal	GOM	CA	AK	Subtotal	Total
Baseline	0%	857.0	5	4	866	38	0	0	38	904
BAT 1	6%	803.0	5	4	812	35	0	0	35	847
BAT 2	6%	803.0	5	4	812	35	0	0	35	847

WBF/Water Phase Composition/Contribution to Toxic/Non-conventional Pollutant Loadings, Offshore Record (from ODD: Table XI-3, p XI-5 and Table XI-6, p XI-9)

Drilling	Composition,	Total nonC+toxics+Ba
Fuids	lbs/bbl	
barite	98	384,792 mg/kg dry
kg/bbl tox+non-Conv		17.1 kg/bbl
lb/bbl tox+non-Conv		37.7 lb/bbl
mineral oil	9	2.9 lb/bbl
TSS	153	153.0 lb/bbl

	(fromODD, p XI-6)					
Cuttings						
Density		543	lbs/bbl			
Adherent mud	5.0%					
Mud TSS	153		lb/bbl			
Ad'nt mud TSS		7.7	lb/bbl			
Total TSS per bbl cuttin	igs	551	lb/bbl			

WBF/ Mineral Oil Phase Contribution to Toxic/Non-conventional Pollutant Loadings

(from ODD: Table XI-5, p XI-7)

(-, -, -,			
MO (9 lb/bbl)	30.51 mg nonconventionals/ml MO:	0.14700	kg/bbl	on-conventional = 99.8%
	0.05 mg toxics/ml MO,	0.00024	kg/bbl	toxics = 0.2%
kg toxic+Non-convent	ional Pollutants per bbl MO	0.147	kg/bbl	
lbs toxic + Non-conve	ntional Pollutants per bbl MO	0.324	lb/bbl	

461 : b/bbl mud 11.0 : lb/gal mud 2.1 : gal of 5% mud 23.1 : wt of 5% mud 543 : lb/bbl cuttings 566 : lb/bbl wet cuttings

WORKSHEET No. D: POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUIDS: CONVENTIONAL POLLUTANTS FROM ZERO DISCHARGE CUTTINGS WINDOOD DAILY OF DISCHARGE CUTTINGS OF THE PROPERTY OF THE PROPERTY

(INJECTED ONSITE OR HAULED FOR ONSHORE DISPOSA	AL) DUE TO PROJECT	ED SHEEN OR TOXICITY T	EST FAILURES, EXISTIN	NG SOURCES				
POLLUTANTS FROM CUTTINGS HAULED OR INJECTED								
(Coventionals)		GOM	Shallow Well CA	AK	GOM	Deep Well CA	AK	Totals
(from ODD: Table XI-2, p XI-4)		GOW	CA	AN	GOW	CA	AK	
well depth, TD		10,559	7,607	10,633	13,037	10,082	12,354	
no. wells , total by region	(from Exh. 2)	857	5	4	857	5	4	866
% WBF (total - OBF) wells failing permit limits	(from Exh. 1)	5.94%	6.75%	4.77%	4.85%	4.16%	5.84%	
No. WBF wells zero discharge cuttings		51	0	0	42	0	0	93
Cuttings (bbl) per well		1,475	1,242	1,480	2,458	1,437	2,413	
CUTTINGS TSS ANALYSIS:								
lbs TSS / bbl	(from Exh. 3)	551	551	551	551	551	551	
lbs TSS per well	(812,209	683,907	814,962	1,353,498	791,284	1,328,718	
total lbs TSS		41,349,547	-	-	56,846,903	-	-	98,196,451
Gulf of Mexico								98,196,451
California								•
Alaska								-
total volume cuttings, bbl		75,092	_	_	103,236	_	_	178,328
Gulf of Mexico		75,032			100,200			178,328
California								
Alaska								-
OUTTINGO OIL ANALYSIS				1				
CUTTINGS OIL ANALYSIS: % wells , by type and region	(from Evb. 1)	51.00%	58.00%	41.00%	49.00%	42.00%	50.00%	
total no. wells, by region		857	58.00%	41.00%	49.00% 857	42.00%	59.00% 4	
no. wells, by type and region	(IIOIII EXII. 2)	437	3	2	420	2	2	866
% wells using MO spot or lube, zero discharge		5.59%	6.75%	4.77%	4.56%	4.16%	5.84%	
no. wells zero discharge		48	0	0	39	0	0	87
cuttings per well, bbl		1,475	1,242	1,480	2,458	1,437	2,413	
fraction adherent fluid		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
volume adherent fluid, per well, bbl		74.0	62	74	123	72	121	
MO, lbs per bbl		9	9	9	9	9	9	
MO, lbs per well total lbs MO		666 31,968	558 -	666	1,107 43,173	648	1,089	75,141
Gulf of Mexico		31,300			43,173			75,141
California								-
Alaska								-
total volume MO, bbl Gulf of Mexico		3,552	-	-	4,797	-	-	8,349 8.349
California								-
Alaska								-
-								
	ONAL POLLUTANTS							
lbs conventional pollutants zero discharge		41,381,515	-	-	56,890,076	-	-	98,271,592
Gulf of Mexico								98,271,592
California Alaska								
Alaska				1				
% injected onsite	onsite	20%	20%	100%	0%	0%	100%	
% hauled onshore	onshore	80%	80%	0%	100%	100%	0%	
lbs pollutants injected		8,276,303	-	-	-	-	-	8,276,303
lbs pollutants disposed onshore		33,105,212	-	-	56,890,076	-	-	89,995,289
Gulf of Mexico	injected onsite							8,276,303
California	injected onsite							-
Alaska Gulf of Mexico	injected onsite disposed onshore							89,995,289
California	disposed onshore							-
Alaska	disposed onshore							
bbl conventional pollutants zero discharged	.,	78,644	-	- 1	108,033	-	-	186,677
Gulf of Mexico	injected onsite	•						15,729
California	injected onsite							-
Alaska	injected onsite							-
Gulf of Mexico	disposed onshore							170,948
California Alaska	disposed onshore disposed onshore							:
Alaska	alopooda orionole							

WORKSHEET No. E: POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUIDS: CONVENTIONAL POLLUTANTS FROM DRILLING FLUIDS ZERO DISCHARGED (INJECTED ONSITE OR HAULED FOR ONSHORE DISPOSAL) DUE TO PROJECTED SHEEN OR TOXICITY TEST FAILURES, EXISTING SOURCES

UTANTS FROM DRILLING FLUIDS HAULED OR INJECTEI rentionals)	D		Shallow Well			Deep Well		Totals
•		GOM	CA	AK	GOM	CA	AK	rotato
ODD: Table XI-2, p XI-4)		40.550	7.007	40.000	40.007	40.000	40.054	
Well Depth, TD		10,559	7,607	10,633	13,037	10,082	12,354	
No. wells , total		857	5	4	857	5	4	866
No. wells hauling fluids		51 6,938	5.030	6.063	9,752	0	0 9,458	93
Drilling fluids (bbl) per well		6,938	5,939	6,963	9,752	6,777	9,458	
WB FLUIDS TSS ANALYSIS:								
lbs TSS / bbl		153	153	153	153	153	153	
lbs TSS per well		1,061,514	908,667	1,065,339	1,492,056	1,036,881	1,447,074	
total lbs TSS		54,041,678	-	-	62,666,352	-	-	116,708,030
Gulf of Mexico								116,708,030
California Alaska								
Alaska								
total volume, bbl, WB fluids		353,214	-	-	409,584	-	-	762,798
Gulf of Mexico					•			762,798
California								-
Alaska								
WB FLUIDS OIL ANALYSIS:								
% wells using MO spot or lube, hauling		5.59%	6.75%	4.77%	4.56%	4.16%	5.84%	
no. wells using hauling		48	-	-	39	-		87
WB fluids discharged per well, bbl		6,938	5,939	6,963	9,752	6,777	9,458	
MO, lbs per bbl		9	9	9	9	9	9	9
MO, lbs per well total lbs MO		62,442 2,997,216	53,451	62,667	87,768 3,422,952	60,993	85,122	85,122 6,420,168
Gulf of Mexico		2,997,210	-		3,422,932	<u>-</u>	- 1	6,420,168
California								0,420,100
Alaska								
total volume MO, bbl		10,049	-	-	11,476	-	-	21,525
Gulf of Mexico California		482,344	-	-	447,572	-	-	929,916
Alaska								-
TOTAL CONVENTIONAL POLLUTANTS:				1				
lbs conventional pollutants zero discharge		57,038,894			66,089,304		-	123,128,198
Gulf of Mexico								123,128,198
California								-
Alaska								-
% injected onsite	onsite	20%	20%	100%	0%	0%	100%	
% hauled onshore	onshore	80%	80%	0%	100%	100%	0%	
lbs pollutants injected		11,407,779	-	-	-	-	-	11,407,779
lbs pollutants disposed onshore		45,631,115	-	-	66,089,304	-	-	111,720,419
Gulf of Mexico	injected onsite			,			•	11,407,779
California	injected onsite							-
Alaska	injected onsite							- 444 700 110
Gulf of Mexico California	disposed onshore disposed onshore							111,720,419
	disposed onshore							
								123,128,198
Alaska								
Alaska	ı	202.055		i	404.005		ı	704.000
Alaska bbl conventional pollutants zero discharged	injected ensite	363,262	-	-	421,060	-	-	784,323
Alaska bbl conventional pollutants zero discharged Gulf of Mexico	injected onsite	363,262	-	-	421,060	-	-	784,323 72,652
Alaska bbl conventional pollutants zero discharged	injected onsite injected onsite injected onsite	363,262	-	- 1	421,060	-	-	

WORKSHEET No. F: POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: TOXIC/NON-CONVENTIONAL POLLUTANTS FROM ZERO DISCHARGE DRILLING FLUIDS (INJECTED ONSITE OR HAULED FOR ONSHORE DISPOSAL) DUE TO SHEEN/TOXICITY TEST FAILURES, EXISTING SOURCES

LUTANTS FROM DISCHARGED DRILLING FLUIDS ics & Non-conventionals)		;	Shallow Well			Deep Well		Totals
KICS HAULED		GOM	CA	AK	GOM	CA	AK	
ODD: Table XI-2, p XI-4)								
Well Depth, TD		10,559	7,607	10,633	13,037	10,082	12,354	
No. wells , total		857	5	4	857	5	4	866
No. wells discharging cuttings		51	0	0	42	0	0	93
Drilling fluidsDischarged (bbl) per well		6,938	5,939	6,963	9,752	6,777	9,458	00
WB FLUIDS TOXICS/NON-CONVENTIONALS:		0,000	0,000	0,000	0,702	0,111	0,100	
lbs toxics/non-conventionals/ bbl (from Exh. 3)	37.7	37.7	37.7	37.7	37.7	37.7	
lbs toxics/non-conventionals per well		261,629	223,957	262,572	367,744	255,558	356,657	
total lbs toxics/non-conventionals		13,319,531	-	202,072	15,445,235	200,000	-	28,764,766
Gulf of Mexico	J	10,010,001		L	10,440,200		L	28,764,766
California								20,701,700
Alaska								_
, ilaska								
total volume, bbl, WB fluids		353,214	_	_	409,584	_	_	762,798
Gulf of Mexico		333,214			403,304			762,798
California								102,190
Alaska								
WB FLUIDS MINERAL OIL TOXICS/NON-CONVE	ENTIONAL S:							
% wells using MO spot or lube, discharging (f		5.59%	0.00%	0.00%	0.00%	0.00%	0.00%	
no. wells using MO and discharging (f		5.59% 48	0.00 /6	0.0076	39	0.00%	0.0076	87
WB fluids discharged per well, bbl	IOIII EXII. SA)	6,938	5,939	6,963	9,752	6,777	9,458	07
	from Exh. 3)	0.324	0.324	0.324	0.324	0.324	0.324	
mineral oil toxics, ib / bbl (IIOIII EXII. 3)	2,247	1,924	2,256	3,159	2,195		14,845
total lbs mineral oil toxics		107,876	1,924	2,236	123,199	2,195	3,064	231,075
Gulf of Mexico		107,070	-		123,199	-		231,075
California								231,075
Alaska								-
Alaska								
total volume MO, bbl		362			413			775
Gulf of Mexico		17,361			16,109			33,470
California		17,001			10,100			-
Alaska								_
	C/NON-CONVENTION	AL POLLITANTS:						
lbs conventional pollutants discharged	C/NON-CONVENTION	13,427,407	_	_	15,568,434	_	_	28,995,841
Gulf of Mexico		13,721,701			13,300,434			28,995,841
California								20,990,041
Alaska								_
Alaska				ı				-
% injected onsite	onsite	20%	20%	100%	0%	0%	100%	
% injected onsite % hauled onshore	onsite	20% 80%	20% 80%	0%	100%	100%	0%	
lbs pollutants injected	OHOHOLE	2,685,481	00 /0	0 /0	10070	100 /6	-	2,685,481
			-	-	1E ECO 424	-		
lbs pollutants disposed onshore	injected consists	10,741,926	-	-	15,568,434	-	-	26,310,360
Gulf of Mexico California	injected onsite							2,685,481
California Alaska	injected onsite injected onsite							-
	disposed onshore							26,310,360
								20,310,360
L'alifornia i	disposed onshore							-
	disposed onshore							20 005 044
					409.997			28,995,841
Alaska	I	252 575		-	409,997		-	763,572 70,715
Alaska bbl conventional pollutants discharged	lateral v 9 -	353,575	-					/// /15
Alaska bbl conventional pollutants discharged Gulf of Mexico	injected onsite	353,575	<u> </u>					70,713
Alaska bbl conventional pollutants discharged Gulf of Mexico California	injected onsite	353,575	<u> </u>					-
Alaska bbl conventional pollutants discharged Gulf of Mexico California Alaska	injected onsite injected onsite	353,575						- -
Alaska bbl conventional pollutants discharged Gulf of Mexico California Alaska Gulf of Mexico	injected onsite injected onsite disposed onshore	353,575	·					-
Alaska bbl conventional pollutants discharged Gulf of Mexico California Alaska Gulf of Mexico California California	injected onsite injected onsite	353,575	-					- -

WORKSHEET G:
Baseline (WBF) Existing Sources - Lower Bound WBF Failure Rate (0%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	838,205,767	3,634,290	3,472,399	845,312,456
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	1,008,839,780	4,799,763	3,959,487	1,017,599,03
	Toxics + Non-conventionals	246,038,746	1,182,987	975,886	248,197,61
	Total Drilling Fluids	1,254,878,526	5,982,750	4,935,373	1,265,796,64
TOTAL ONSITE DISCHARGE LOADINGS		2,093,084,293	9,617,040	8,407,772	2,111,109,10
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	-	-	-	-
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	<u>-</u>	-	-	-
	Toxics + Non-conventionals	-	-	-	-
	Total Drilling Fluids	-	-	-	-
TOTAL ZD/ONSHORE DISPOSAL LO	DADINGS	_	-	-	-
	Onsite Injection	-	-	-	-
	Haul/Onshore Disposal	-	-	-	-
ONSITE AND ZD/ONSHORE BASELINE WBF POLLU	TANT LOADINGS	2,093,084,293	9,617,040	8,407,772	2,111,109,10

BAT 1 & 2 (WBF) Existing Sources - Lower Bound WBF Failure Rate (0%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	786,319,752	3,634,290	3,472,399	793,426,441
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	946,379,702	4,799,763	3,959,487	955,138,952
	Toxics + Non-conventionals	230,802,429	1,182,987	975,886	232,961,301
	Total Drilling Fluids	1,177,182,130	5,982,750	4,935,373	1,188,100,253
TOTAL ONSITE DISCHARGE LOADIN	GS	1,963,501,883	9,617,040	8,407,772	1,981,526,694
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	-	-	-	-
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	-	-	-	-
	Toxics + Non-conventionals	-	-	-	-
	Total Drilling Fluids	-	-	-	-
TOTAL ZD/ONSHORE DISPOSAL LOA	ADINGS	-	-	-	-
	Onsite Injection	-	-	-	-
	Haul/Onshore Disposal	-	-	-	-
ONSITE AND ZD/ONSHORE BASELINE WBF POLLUT	ANT LOADINGS	1,963,501,883	9,617,040	8,407,772	1,981,526,694

WORKSHEET G:

BAT 3 (WBF) Existing Sources - Lower Bound WBF Failure Rate (0%)

,		ischarge and Zero Discharge/Onshore Disp	GOM	CA	AK	Total
			GOW	- CA	AN	Total
ONSITE DISC	CHARGE: Loadings, Cuttings	Conventionals	858,659,743	3,634,290	3,472,399	865,766,43
ONSITE DISC	CHARGE: Loadings, Fluids	Conventionals	1,033,437,358	4,799,763	3,959,487	1,042,196,60
		Toxics + Non-conventionals	252,024,882	1,182,987	975,886	254,183,75
		Total Drilling Fluids	1,285,462,241	5,982,750	4,935,373	1,296,380,36
TOTA	AL ONSITE DISCHARGE LOAD	DINGS	2,144,121,984	9,617,040	8,407,772	2,162,146,79
ZD/ONSHORE DISP	POSAL: Loadings, Cuttings	Conventionals	-	-	-	-
ZD/ONSHORE DISP	POSAL: Loadings, Fluids	Conventionals	-	-	-	-
	<u></u>	Toxics + Non-conventionals	-	-	-	-
		Total Drilling Fluids	-	-	-	-
TOTA	AL ZD/ONSHORE DISPOSAL L		-	-	-	-
		Onsite Injection	-	-	-	-
		Haul/Onshore Disposal	-	-	-	-
TAL ONSITE AND ZD/ONS	SHORE BASELINE WBF POLL	UTANT LOADINGS	2,144,121,984	9,617,040	8,407,772	2,162,146,79
	F					
SCHARGE S >>>	- 2,111,109,104	total toxic/non-conv: baseline	248,197,619	total conventionals:	baseline	1,862,911,48
	- 1,981,526,694	BAT 1 & 2	232,961,301		BAT 1 & 2	1,748,565,39
	- 2,162,146,796	BAT 3	254,183,755		BAT 3	1,907,963,04
		Incr BAT 1 &2	(15,236,318)		Incr BAT 1 &2	(114,346,09
		Incr BAT 3	5,986,136		Incr BAT 3	45,051,55

WORKSHEET H:
Baseline (WBF) Existing Sources - Upper Bound WBF Failure Rate (10.73%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	739,934,175	3,634,290	3,472,399	747,040,8
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	885,711,582	4,799,763	3,959,487	894,470,8
-	Toxics + Non-conventionals	217,042,905	1,182,987	975,886	219,201,7
	Total Drilling Fluids	1,102,754,487	5,982,750	4,935,373	1,113,672,
TOTAL ONSITE DISCHARGE LOADING	38	1,842,688,662	9,617,040	8,407,772	1,860,713,
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	98,271,592	-	-	98,271,
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	123,128,198	-	-	123,128
	Toxics + Non-conventionals	28,995,841	-	-	28,995
	Total Drilling Fluids	152,124,039	-	-	152,124
TOTAL ZD/ONSHORE DISPOSAL LOA	DINGS	250,395,631	-	-	250,395
	Onsite Injection	22,369,563	-	-	22,369
	Haul/Onshore Disposal	228,026,068	-	-	228,026
ONSITE AND ZD/ONSHORE BASELINE WBF POLLUT.	ANT LOADINGS	2,093,084,293	9,617,040	8,407,772	2,111,109

BAT 1 & 2 (WBF) Existing Sources - Upper Bound WBF Failure Rate (10.73%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	694,720,056	3,634,290	3,472,399	701,826,74
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	831,497,994	4,799,763	3,959,487	840,257,24
	Toxics + Non-conventionals	203,762,708	1,182,987	975,886	205,921,58
	Total Drilling Fluids	1,035,260,702	5,982,750	4,935,373	1,046,178,82
TOTAL ONSITE DISCHARGE LOADINGS	3	1,729,980,757	9,617,040	8,407,772	1,748,005,569
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	91,599,697	0	0	91,599,69
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	114,881,708	0	0	114,881,70
	Toxics + Non-conventionals	27,039,721	0	0	27,039,72
_	Total Drilling Fluids	141,921,429	0	0	141,921,429
TOTAL ZD/ONSHORE DISPOSAL LOAD	NGS	233,521,125	0	0	233,521,12
	Onsite Injection	20,959,454	0	0	20,959,45
	Haul/Onshore Disposal	212,561,671	0	0	212,561,67
ONSITE AND ZD/ONSHORE BASELINE WBF POLLUTAN	IT LOADINGS	1,963,501,883	9,617,040	8,407,772	1,981,526,69

WORKSHEET H:
BAT 3 (WBF) Existing Sources - Upper Bound WBF Failure Rate (10.73%)

			GOM	CA	AK	Total
ONSITE DISC	CHARGE: Loadings, Cuttings	Conventionals	758,074,474	3,634,290	3,472,399	765,18
ONSITE DISC	CHARGE: Loadings, Fluids	Conventionals	907,414,308	4,799,763	3,959,487	916,1
		Toxics + Non-conventionals	222,347,169	1,182,987	975,886	224,5
		Total Drilling Fluids	1,129,761,477	5,982,750	4,935,373	1,140,6
ТОТ	AL ONSITE DISCHARGE LOADI	NGS	1,887,835,951	9,617,040	8,407,772	1,905,8
ZD/ONSHORE DISF	POSAL: Loadings, Cuttings	Conventionals	100,585,269	-	-	100,5
ZD/ONSHORE DISF	POSAL: Loadings, Fluids	Conventionals	126,023,050	-	=	126,0
	_	Toxics + Non-conventionals	29,677,713	-	-	29,6
		Total Drilling Fluids	155,700,764	-	-	155,7
TOT	AL ZD/ONSHORE DISPOSAL LO	DADINGS	256,286,033	-	=	256,2
		Onsite Injection	22,886,577	=	-	22,8
		Haul/Onshore Disposal	233,399,455	-	-	233,3
ONSITE AND ZD/ONS	SHORE BASELINE WBF POLLU	TANT LOADINGS	2,144,121,984	9,617,040	8,407,772	2,162,1
ARGE S >>>	- 1,860,713,474	total toxic/non-conv: baseline	219,201,778	total conventionals:	baseline	1,641,5
	- 1,748,005,569	BAT 1 & 2	205,921,580	total com officialo.	BAT 1 & 2	1,542,0
	- 1,905,860,763	BAT 3	224,506,042		BAT 3	1,681,3
	1,000,000,000	Incr BAT 1 &2	(13,280,197)		Incr BAT 1 &2	(99,4
		Incr BAT 3	5,304,264		Incr BAT 3	39,8

WORKSHEET AA: SUMMARY OF EXISTING SOURCE DRILLING FLUID DISPOSAL LOADINGS BY REGION, OPTION, FLUID TYPE, AND LOCATION Gulf of Mexico -- Lower Failure Rate

Oun or wie	XICO LOW	er ranure Kale	I= =:			I		
		Onsite	Zero Discharge Alterna	tive Disposal Methods	Total Media	Net Load	dings (Reductions), lbs	
		Discharge	Onsite Injection	Haul/ Onshore Disposal	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf	2,093,084,293	0	0	2,093,084,293			
	sbf	237,890,828	0	0	237,890,828			
	obf	0	11,862,178	47,448,711	59,310,889			
	total	2,330,975,121	11,862,178	47,448,711	2,390,286,010			
BAT 1								
	wbf	1,963,501,883	0	0	1,963,501,883			
	sbf	259,628,314	0	0	259,628,314			
	obf	0	7,092,172	28,368,689	35,460,861			
	total	2,223,130,197	7,092,172	28,368,689	2,258,591,058	-107,844,924	-23,850,028	-131,694,952
BAT 2								
	wbf	1,963,501,883	0	0	1,963,501,883			
	sbf	252,066,749	0	7,561,565	259,628,314			
	obf	0	7,092,172	28,368,689	35,460,861			
	total	2,215,568,632	7,092,172	35,930,254	2,258,591,058	-115,406,489	-16,288,463	-131,694,952
BAT 3								
	wbf	2,144,121,984	0	0	2,144,121,984			
	sbf	0	0	19,766,219	19,766,219			
	obf	0	36,101,236	204,866,907	240,968,143			
	total	2,144,121,984	36,101,236	224,633,126	2,404,856,346	-186,853,137	201,423,473	14,570,336

California -- Lower Failure Rate

			Zara Diagharma Altarna	tive Disposal Matheda	Total Madia	Net Lea	dings (Dadwatiana) lbs	
		Onsite	Zero Discharge Alternat		Total Media		dings (Reductions), Ibs	
		Discharge	Onsite Injection	Haul/ Onshore Disposal	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf	9,617,040	0	0	9,617,040			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188			
BAT 1]		
	wbf	9,617,040	0	0	9,617,040			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188	0	0	-
BAT 2								
	wbf	9,617,040	0	0	9,617,040			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188	0	0	-
BAT 3								
	wbf	9,617,040	0	0	9,617,040			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188	0	0	-

WORKSHEET AA: SUMMARY OF EXISTING SOURCE DRILLING FLUID DISPOSAL LOADINGS BY REGION, OPTION, FLUID TYPE, AND LOCATION Cook Inlet, Alaska -- Lower Failure Rate

	•	Onsite	Zero Discharge Alternat	tive Disposal Methods	Total Media	Net Load	lings (Reductions), lbs	
		Discharge	Onsite Injection	Haul/ Onshore Disposal	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf	8,407,772	0	0	8,407,772			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	8,407,772	1,945,148	0	10,352,920			
BAT 1								
	wbf	8,407,772	0	0	8,407,772]		
	sbf	552,796	0	0	552,796			
	obf	0	1,316,784	0	1,316,784			
	total	8,960,568	1,316,784	0	10,277,352	552,796	-628,364	-75,568
BAT 2								
	wbf	8,407,772	0	0	8,407,772			
	sbf	536,696	16,100	0	552,796			
	obf	0	1,316,784	0	1,316,784			
	total	8,944,468	1,332,884	0	10,277,352	536,696	-612,264	-75,568
BAT 3								
	wbf	8,407,772	0	0	8,407,772]		
	sbf	0	0	0	0]		
	obf	0	1,945,148	0	1,945,148			
	total	8,407,772	1,945,148	0	10,352,920	0	0	-

TOTAL -- Lower Failure Rate

		Onsite	Zero Discharge Alternat	ive Disposal Methods Total Media		Net Loadings (Reductions), lbs			
		Discharge	Onsite Injection	Haul/ Onshore Disposal	Pollutant Loadings	Onsite (marine)	Onshore	All Media	
Baseline						Discharges	Disposal	Totals	
	wbf	2,111,109,104	0	0	2,111,109,104				
	sbf	237,890,828	0	0	237,890,828				
	obf	0	15,752,474	47,448,711	63,201,185				
	total	2,348,999,932	15,752,474	47,448,711	2,412,201,117				
BAT 1									
	wbf	1,981,526,694	0	0	1,981,526,694				
	sbf	260,181,110	0	0	260,181,110				
	obf	0	10,354,104	28,368,689	38,722,793				
	total	2,241,707,804	10,354,104	28,368,689	2,280,430,597	-107,292,128	-24,478,392	-131,770,520	
BAT 2									
	wbf	1,981,526,694	0	0	1,981,526,694				
	sbf	252,603,445	16,100	7,561,565	260,181,110				
	obf	0	10,354,104	28,368,689	38,722,793				
	total	2,234,130,139	10,370,204	35,930,254	2,280,430,597	-114,869,793	-16,900,727	-131,770,520	
BAT 3									
	wbf	2,162,146,796	0	0	2,162,146,796				
1	sbf	0	0	19,766,219	19,766,219				
1	obf	0	39,991,532	204,866,907	244,858,439				
	total	2,162,146,796	39,991,532	224,633,126	2,426,771,454	-186,853,137	201,423,473	14,570,336	

WORKSHEET AA: SUMMARY OF EXISTING SOURCE DRILLING FLUID DISPOSAL LOADINGS BY REGION, OPTION, FLUID TYPE, AND LOCATION INCREMENTAL LOADINGS (REDUCTIONS) Existing Sources

TIAL LUADI	NOS (NEDUCTIONS)	Existing Sources					
	Onsite	Zero Discharge Alterna	tive Disposal Methods	Total Media			
	Discharge	Onsite Injection	Haul/ Onshore Disposal	Pollutant Loadings			
wbf							
sbf							
obf							
total							
wbf	-129,582,410	0	0	-129,582,410			
sbf	22,290,282	0	0	22,290,282			
obf	0	-5,398,370	-19,080,022	-24,478,392			
total	-107,292,128	-5,398,370	-19,080,022	-131,770,520			
wbf	-129,582,410	0	0	-129,582,410			
sbf	14,712,617	16,100	7,561,565	22,290,282			
obf	0	-5,398,370	-19,080,022	-24,478,392			
total	-114,869,793	-5,382,270	-11,518,457	-131,770,520			
wbf	51,037,691	0	0	51,037,691			
sbf	-237,890,828	0	19,766,219	-218,124,609			
obf	0	24,239,058	157,418,196	181,657,254			
total	-186,853,137	24,239,058	177,184,415	14,570,336			
	wbf sbf obf total wbf sbf obf total wbf sbf obf total wbf sbf obf total	Onsite Discharge	wbf Onsite Injection sbf obf total 0 wbf -129,582,410 0 sbf 22,290,282 0 obf 0 -5,398,370 total -107,292,128 -5,398,370 wbf -129,582,410 0 sbf 14,712,617 16,100 obf 0 -5,398,370 total -114,869,793 -5,382,270 wbf 51,037,691 0 sbf -237,890,828 0 obf 0 24,239,058	Onsite Discharge Zero Discharge Alternative Disposal Methods Onsite Injection Haul/ Onshore Disposal wbf 5bf Haul/ Onshore Disposal obf 0 0 total 0 0 sbf 22,290,282 0 0 obf 0 -5,398,370 -19,080,022 total -107,292,128 -5,398,370 -19,080,022 wbf -129,582,410 0 0 sbf 14,712,617 16,100 7,561,565 obf 0 -5,398,370 -19,080,022 total -114,869,793 -5,382,270 -11,518,457 wbf 51,037,691 0 0 sbf -237,890,828 0 19,766,219 obf 0 24,239,058 157,418,196			

SUMMARY TOTAL LOADINGS (REDUCTIONS)

		Onsite	Zero Discharge Alternat	tive Disposal Methods	Total Media
		Discharge	Onsite Injection	Haul/ Onshore Disposal	Pollutant Loadings
Baseline	total	2,348,999,932	15,752,474	47,448,711	2,412,201,117
BAT 1	total	2,241,707,804	10,354,104	28,368,689	2,280,430,597
BAT 2	total	2,234,130,139	10,370,204	35,930,254	2,280,430,597
BAT 3	total	2,162,146,796	39,991,532	224,633,126	2,426,771,454

Existing Sources

SUMMARY	INCREMEN	TAL LOADINGS (RE	DUCTIONS)		Existing Sources
		Onsite	Zero Discharge Alternat	Total Media	
		Discharge	Onsite Injection	Haul/ Onshore Disposal	Pollutant Loadings
Baseline	seline NA NA NA		NA	NA	
BAT 1	total	-107,292,128	-5,398,370	-19,080,022	-131,770,520
BAT 2	total	-114,869,793	-5,382,270	-11,518,457	-131,770,520
BAT 3	total	-186,853,137	24,239,058	177,184,415	14,570,336

WORKSHEET No. I: POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUIDS: CONVENTIONAL POLLUTANTS FROM ZERO DISCHARGE CUTTINGS, (INJECTED ONSITE OR HALL ED FOR ONSHORE DISPOSAL) DUE TO PROJECTED SHEEN OR TOXICITY TEST FAILURES NEW SOURCES

(INJECTED ONSITE OR HAULED FOR ONSHORE DISPOSAL) DUE TO PROJI POLLUTANTS FROM CUTTINGS HAULED OR INJECTED	ECTED SHEEN OR TOXICI	TY TEST FAILURES, NEV	V SOURCES			1	
(Coventionals)		Shallow Well			Deep Well		Totals
,	GOM	CA	AK	GOM	CA	AK	
(from ODD: Table XI-2, p XI-4)	40.550	7.007	40.000	40.007	40.000	40.054	
well depth, TD no. wells , total by region (from Exh. 2)	10,559 38	7,607	10,633	13,037 38	10,082	12,354	38
% WBF (total - OBF) wells failing permit limits (from Exh. 1)	5.94%	6.75%	4.77%	4.85%	4.16%	5.84%	36
No. WBF wells zero discharge cuttings	2	0	0	2	0	0	4
Cuttings (bbl) per well	1,475	1,242	1,480	2,458	1,437	2,413	
CUTTINGS TSS ANALYSIS:	554	554	554	554	554	554	
lbs TSS / bbl (from Exh. 3) lbs TSS per well	551 812,209	551 683,907	551 814,962	551 1,353,498	551 791,284	551 1,328,718	
total lbs TSS	1,624,418	000,907	014,302	2,706,995	0	0	4,331,413
Gulf of Mexico	, , ,	-		,,			4,331,413
California							-
Alaska	0.050			1010			-
total volume cuttings, bbl Gulf of Mexico	2,950	0	0	4,916	0	0	7,866 7,866
California							7,800
Alaska							
CUTTINGS OIL ANALYSIS:							
% wells , by type and region (from Exh. 1)	51.00%	58.00%	41.00%	49.00%	42.00%	59.00%	
total no. wells, by region (from Exh. 2) no. wells, by type and region	38 19	- 0	- 0	38 19	- 0	- 0	38
% wells using MO spot or lube, zero discharge	5.59%	6.75%	4.77%	4.56%	4.16%	5.84%	30
no. wells zero discharge	2	0070	0	2	0	0	4
cuttings per well, bbl	1,475	1,242	1,480	2,458	1,437	2,413	
fraction adherent fluid	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
volume adherent fluid, per well, bbl	74.0	62	74	123	72	121	
MO, lbs per bbl MO, lbs per well	9 666	9 558	666	9 1,107	9 648	1,089	
total lbs MO	1,332	0	000	2,214	040	0	3,546
Gulf of Mexico	, , , , ,	-		,			3,546
California							-
Alaska							
total volume MO, bbl Gulf of Mexico	148	0	0	246	0	0	394 394
California							-
Alaska							-
TOTAL CONVENTIONAL POLLUTANTS							
lbs conventional pollutants zero discharge	1,625,750	0	0	2,709,209	0	0	4,334,959
Gulf of Mexico							4,334,959
California Alaska							-
Λιαοπα							
% injected onsite onsite	20%	20%	100%	0%	0%	100%	
% hauled onshore onshore	80%	80%	0%	100%	100%	0%	-
lbs pollutants injected	325,150	0	0	0 700 000	0	0	325,150
Ibs pollutants disposed onshore Gulf of Mexico injected onsite	1,300,600	0	0	2,709,209	0	0	4,009,809 325,150
California injected onsite							-
Alaska injected onsite							
Gulf of Mexico disposed onshore							4,009,809
California disposed onshore							-
Alaska disposed onshore bbl conventional pollutants zero discharged	3,098	0	0	5,162	0	0	8,260
Gulf of Mexico injected onsite	3,090	<u> </u>	U ₁	3,102	<u> </u>	•	620
California injected onsite							-
Alaska injected onsite							-
Gulf of Mexico disposed onshore							7,640
California disposed onshore							-
Alaska disposed onshore							-

WORKSHEET No. J:
POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUIDS: CONVENTIONAL POLLUTANTS FROM DRILLING FLUIDS ZERO DISCHARGED
(INJECTED ONSITE OR HAULED FOR ONSHORE DISPOSAL) DUE TO PROJECTED SHEEN OR TOXICITY TEST FAILURES, NEW SOURCES

TS FROM DRILLING FLUIDS HAULED OR INJECTEI nals)			Shallow Well			Deep Well		Totals
		GOM	CA	AK	GOM	CA	AK	
Table XI-2, p XI-4)								
Well Depth, TD		10,559	7,607	10,633	13,037	10,082	12,354	
No. wells , total		38	-	-	38	-	-	38
No. wells hauling fluids		2	0	0	2	0	0	
Drilling fluids (bbl) per well		6,938	5,939	6,963	9,752	6,777	9,458	
WB FLUIDS TSS ANALYSIS:								
lbs TSS / bbl		153	153	153	153	153	153	
lbs TSS per well		1,061,514	908,667	1,065,339	1,492,056	1,036,881	1,447,074	
total lbs TSS		2,123,028	-	-	2,984,112	-	-	5,107,140
Gulf of Mexico	"	, ,,		ı.	,,		·	5,107,140
California								-
Alaska								-
total volume, bbl, WB fluids		13,876	-	-	19,504	-	-	33,380
Gulf of Mexico								33,380
California								-
Alaska								-
WB FLUIDS OIL ANALYSIS:			•					
% wells using MO spot or lube, hauling		5.59%	6.75%	4.77%	4.56%	4.16%	5.84%	
no. wells using hauling		2	-	-	2	-		
WB fluids discharged per well, bbl		6,938	5,939	6,963	9,752	6,777	9,458	
MO, lbs per bbl		9	9	9	9	9	9	
MO, lbs per well		62,442	53,451	62,667	87,768	60,993	85,122	85,122
total lbs MO		124,884	-	-	175,536	-	-	300,420
Gulf of Mexico								300,420
California								-
Alaska								-
total volume MO, bbl		419	_	_	589	_	-	1,007
Gulf of Mexico		837	-	-	1,177	-	-	2,014
California					,			-
Alaska								_
TOTAL CONVENTIONAL POLLUTANTS:								
lbs conventional pollutants zero discharge		2,247,912	-	-	3,159,648	_	-	5,407,560
Gulf of Mexico		, ,			-,,-			5,407,560
California								· · · · ·
Alaska								-
% injected onsite	onsite	20%	20%	100%	0%	0%	100%	
	onshore	80%	80%	0%	100%	100%	0%	
% hauled onshore	011011010					-	-	449,582
lbs pollutants injected	Sildinore	449,582	-	-	-			4,957,978
lbs pollutants injected lbs pollutants disposed onshore		449,582 1,798,330	-	-	3,159,648	-	-	
Ibs pollutants injected Ibs pollutants disposed onshore Gulf of Mexico	injected onsite		-		3,159,648	-	-	
lbs pollutants injected lbs pollutants disposed onshore Gulf of Mexico California	injected onsite injected onsite		-		3,159,648	-	-	
lbs pollutants injected lbs pollutants disposed onshore Gulf of Mexico California Alaska	injected onsite injected onsite injected onsite		<u> </u>		3,159,648	-	-	449,582 - -
lbs pollutants injected lbs pollutants disposed onshore Gulf of Mexico California Alaska Gulf of Mexico	injected onsite injected onsite injected onsite disposed onshore		:		3,159,648	-	- 1	449,582 - - 4,957,978
lbs pollutants injected lbs pollutants disposed onshore Gulf of Mexico California Alaska Gulf of Mexico California	injected onsite injected onsite injected onsite disposed onshore disposed onshore		<u> </u>		3,159,648	-	- 1	449,582 - -
lbs pollutants injected lbs pollutants disposed onshore Gulf of Mexico California Alaska Gulf of Mexico	injected onsite injected onsite injected onsite disposed onshore disposed onshore		:		3,159,648	-	- 1	449,582 - - - 4,957,978 - -
lbs pollutants injected lbs pollutants disposed onshore Gulf of Mexico California Alaska Gulf of Mexico California Alaska	injected onsite injected onsite injected onsite disposed onshore disposed onshore	1,798,330		-		-	-	449,582 - - - 4,957,978 - - 5,407,560
Ibs pollutants injected Ibs pollutants disposed onshore Gulf of Mexico California Alaska Gulf of Mexico California Alaska Laska bbl conventional pollutants zero discharged	injected onsite injected onsite injected onsite disposed onshore disposed onshore disposed onshore		:		3,159,648	-	-	449,582 - - - 4,957,978 - - 5,407,560 34,387
Ibs pollutants injected Ibs pollutants disposed onshore Gulf of Mexico California Alaska Gulf of Mexico California Alaska bbl conventional pollutants zero discharged Gulf of Mexico	injected onsite injected onsite injected onsite disposed onshore disposed onshore disposed onshore	1,798,330	-	-		-	-	449,582 - - 4,957,978 - - 5,407,560 34,387 2,859
Ibs pollutants injected Ibs pollutants disposed onshore Gulf of Mexico California Alaska Gulf of Mexico California Alaska Laska bbl conventional pollutants zero discharged	injected onsite injected onsite injected onsite disposed onshore disposed onshore disposed onshore	1,798,330	-	-		-	- 1	449,582 - - 4,957,978

WORKSHEET No. K:

POLLUTANT LOADINGS FROM WATER-BASED DRILLING FLUID: TOXIC/NON-CONVENTIONAL POLLUTANTS FROM ZERO DISCHARGE
DRILLING FLUIDS (INJECTED ONSITE OR HAULED FOR ONSHORE DISPOSAL) DUE TO SHEEN/TOXICITY TEST FAILURES, NEW SOURCE:

DRILLING FLUIDS (INJECTED ONSITE OR HAULED FOR	ONSHORE DISPOSA	AL) DUE TO SHEEN/TOXI	ICITY TEST FAILU	RES, NEW SOURC	CES			
POLLUTANTS FROM DISCHARGED DRILLING FLUIDS								
(Toxics & Non-conventionals)			Shallow Well			Deep Well		Totals
TOXICS HAULED		GOM	CA	AK	GOM	CA	AK	
(from ODD: Table XI-2, p XI-4)								
Well Depth, TD		10,559	7,607	10,633	13,037	10,082	12,354	
No. wells , total		38	-	-	38	-	-	38
No. wells discharging cuttings		2	0	0	2	0	0	4
Drilling fluidsDischarged (bbl) per well		6,938	5,939	6,963	9,752	6,777	9,458	
WB FLUIDS TOXICS/NON-CONVENTIONALS:		l						
lbs toxics/non-conventionals/ bbl	(from Exh. 3)	37.7	37.7	37.7	37.7	37.7	37.7	
lbs toxics/non-conventionals per well		261,629	223,957	262,572	367,744	255,558	356,657	
total lbs toxics/non-conventionals		523,258	-	-	735,487		-	1,258,745
Gulf of Mexico								1,258,745
California								-
Alaska								_
total volume, bbl, WB fluids		13,876			19,504	_		33,380
Gulf of Mexico		10,070			10,004			33,380
California								-
Alaska								-
WB FLUIDS MINERAL OIL TOXICS/NON-CONVE	NTIONAL S:							
% wells using MO spot or lube, discharging		5.59%	0.00%	0.00%	0.00%	0.00%	0.00%	
no. wells using MO and discharging		5.59%	0.00%	0.00%	0.00%	0.00%	0.00%	4
WB fluids discharged per well, bbl	(IIOIII EXII. SA)	6,938	5,939	6,963	9,752	6,777	9,458	4
mineral oil toxics, lb / bbl	(frame Fully 2)	9.000	9.000	9.000	9,752	9.000	9.000	
mineral oil toxics, lb / bbl	(IIOIII EXII. 3)							440 440
		62,442	53,451	62,667	87,768	60,993	85,122	412,443
total lbs mineral oil toxics Gulf of Mexico		124,884	<u>-</u>		175,536		-	300,420
California								300,420
Alaska								-
total volume MO, bbl		419			589			1,007
Gulf of Mexico		837	-		1.177			2,014
California		637	-	-	1,177	-	-	2,014
								-
Alaska	OVICAIONI CONVENT	IONAL POLLUTANTS:						
lbs conventional pollutants discharged	JAIC/NON-CONVENTI	648,142			911,023			1 550 165
Gulf of Mexico		646,142			911,023			1,559,165 1,559,165
								1,559,165
California								-
Alaska	anaita	200/	200/	4000/	00/	00/	1000/	
% injected onsite	onsite	20%	20%	100%	0%	0%	100%	
% hauled onshore	onshore	80% 129,628	80%	0%	100%	100%	0%	129,628
lbs pollutants injected			-	-	- 044 000	•	•	
Ibs pollutants disposed onshore	inicated analta	518,514	-	-	911,023	•	•	1,429,537
Gulf of Mexico	injected onsite							129,628
California	injected onsite							-
Alaska	injected onsite							4 400 507
Gulf of Mexico	disposed onshore							1,429,537
California	disposed onshore							-
Alaska	disposed onshore							4.550.405
hal conventional nativitation of the state of the	İ	44.005		j	20.000		İ	1,559,165
bbl conventional pollutants discharged	iningtod angit -	14,295	<u> </u>		20,093	<u>-</u>		34,387
Gulf of Mexico	injected onsite							2,859
California	injected onsite							-
Alaska	injected onsite							24 520
Gulf of Mexico	disposed onshore							31,528
California Alaska	disposed onshore disposed onshore							-

WORKSHEET L:
Baseline (WBF) New Sources - Lower Bound WBF Failure Rate (0%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	37,095,021	-	-	37,095,02
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	44,642,502	-	-	44,642,5
To	xics + Non-conventionals	11,166,082	-	-	11,166,0
	Total Drilling Fluids	55,808,584	-	=	55,808,5
TOTAL ONSITE DISCHARGE LOADIN	GS	92,903,606	-	-	92,903,6
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	-	-	-	-
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	-	-	-	
To	xics + Non-conventionals	-	-	-	
	Total Drilling Fluids	-	-	-	
TOTAL ZD/ONSHORE DISPOSAL LOA	DINGS	-	-	-	
	Onsite Injection	-	-	-	
	Haul/Onshore Disposal	-	-	-	
L ONSITE AND ZD/ONSHORE BASELINE WBF POLLUT	ANT LOADINGS	92,903,606	_	_	92,903,6

BAT 1 & 2 (WBF) New Sources - Lower Bound WBF Failure Rate (0%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	34,928,208	-	-	34,928,208
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	42,001,164	-	-	42,001,164
Toxi	cs + Non-conventionals	10,533,551	-	-	10,533,551
	Total Drilling Fluids	52,534,715	-	-	52,534,715
TOTAL ONSITE DISCHARGE LOADING	S	87,462,923	-	-	87,462,923
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	-	-	-	-
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	-	-	-	-
Toxi	cs + Non-conventionals	-	-	=	=
	Total Drilling Fluids	-	-	-	-
TOTAL ZD/ONSHORE DISPOSAL LOAD	INGS	-	=	-	-
	Onsite Injection	-	-	=	-
	Haul/Onshore Disposal	-	-	-	-
AL ONSITE AND ZD/ONSHORE BASELINE WBF POLLUTA	NT LOADINGS	87,462,923	_	_	87,462,923

WORKSHEET L:
BAT 3 (WBF) New Sources - Lower Bound WBF Failure Rate (0%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	40,072,937	-	-	40,072,93
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	48,257,586	-	-	48,257,58
Тох	ics + Non-conventionals	12,057,084	-	-	12,057,08
	Total Drilling Fluids	60,314,670	=	-	60,314,67
TOTAL ONSITE DISCHARGE LOADING	SS	100,387,607	-	-	100,387,60
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	-	-	-	-
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	-	-	-	-
Tox	ics + Non-conventionals	-	-	-	-
	Total Drilling Fluids	-	-	-	-
TOTAL ZD/ONSHORE DISPOSAL LOA	DINGS	-	=	-	=
	Onsite Injection	-	-	-	-
	Haul/Onshore Disposal	-	-	-	-
ONSITE AND ZD/ONSHORE BASELINE WBF POLLUTA	ANT LOADINGS	100,387,607	_	_	100,387,60

-	92,903,606	total toxic/non-conv: baseline	11,166,082	total conventionals:	baseline	81,737,523
-	87,462,923	BAT 1 & 2	10,533,551		BAT 1 & 2	76,929,372
-	100,387,607	BAT 3	12,057,084		BAT 3	88,330,523
		Incr BAT 1 &2	(632,532)		Incr BAT 1 &2	(4,808,151)
		Incr BAT 3	891,002		Incr BAT 3	6,592,999

WORKSHEET M:
Baseline (WBF) New Sources - Upper Bound WBF Failure Rate (0%)

Summary of Total Baseline Water-Based Fluids Onsite Discl	narge and Zero Discharge/Onshore	Disposal Loadings			
		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	32,760,063	-	-	32,760,063
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	39,234,942	-	-	39,234,942
7	oxics + Non-conventionals	9,606,917	-	-	9,606,917
	Total Drilling Fluids	48,841,859	-	-	48,841,859
TOTAL ONSITE DISCHARGE LOADING	S	81,601,922	-	-	81,601,922
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	4,334,959	-	-	4,334,959
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	5,407,560	-	-	5,407,560
7	oxics + Non-conventionals	1,559,165	-	-	1,559,165
	Total Drilling Fluids	6,966,725	-	-	6,966,725
TOTAL ZD/ONSHORE DISPOSAL LOAD	INGS	11,301,684	-	-	11,301,684
	Onsite Injection	904,361	-	-	904,361
	Haul/Onshore Disposal	10,397,324	-	-	10,397,324
TOTAL ONSITE AND ZD/ONSHORE BASELINE WBF POLLUTA	NT LOADINGS	92,903,606	-	-	92,903,606

BAT 1 & 2 (WBF) New Sources - Upper Bound WBF Failure Rate (0%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	30,593,249	0	0	30,593,24
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	36,593,604	0	0	36,593,60
Т	oxics + Non-conventionals	8,974,385	0	0	8,974,38
	Total Drilling Fluids	45,567,989	0	0	45,567,98
TOTAL ONSITE DISCHARGE LOADING	S	76,161,239	0	0	76,161,239
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	4,334,959	0	0	4,334,95
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	5,407,560	0	0	5,407,56
Т	oxics + Non-conventionals	1,559,165	0	0	1,559,16
	Total Drilling Fluids	6,966,725	0	0	6,966,72
TOTAL ZD/ONSHORE DISPOSAL LOAD	INGS	11,301,684	0	0	11,301,68
	Onsite Injection	904,361	0	0	904,36
	Haul/Onshore Disposal	10,397,324	0	0	10,397,324
ONSITE AND ZD/ONSHORE BASELINE WBF POLLUTA	NT LOADINGS	87,462,923	0	0	87,462,92

WORKSHEET M:
BAT 3 (WBF) New Sources - Upper Bound WBF Failure Rate (0%)

		GOM	CA	AK	Total
ONSITE DISCHARGE: Loadings, Cuttings	Conventionals	35,737,978	-	-	35,737,97
ONSITE DISCHARGE: Loadings, Fluids	Conventionals	42,850,026	-	-	42,850,0
Т	oxics + Non-conventionals	10,497,919	-	-	10,497,9
	Total Drilling Fluids	53,347,945	-	=	53,347,9
TOTAL ONSITE DISCHARGE LOADING	3	89,085,922	-	-	89,085,9
ZD/ONSHORE DISPOSAL: Loadings, Cuttings	Conventionals	4,334,959	-	-	4,334,9
ZD/ONSHORE DISPOSAL: Loadings, Fluids	Conventionals	5,407,560	-	-	5,407,5
Т	oxics + Non-conventionals	1,559,165	-	-	1,559,
	Total Drilling Fluids	6,966,725	-	-	6,966,7
TOTAL ZD/ONSHORE DISPOSAL LOAD	INGS	11,301,684	-	-	11,301,6
	Onsite Injection	904,361	-	=	904,3
	Haul/Onshore Disposal	10,397,324	-	-	10,397,3
ONSITE AND ZD/ONSHORE BASELINE WBF POLLUTA	NT LOADINGS	100,387,607	_	_	100,387,6

-	81,601,922	total toxic/non-conv: baseline	9,606,917 total conventionals:	baseline	71,995,005
-	76,161,239	BAT 1 & 2	8,974,385	BAT 1 & 2	67,186,853
-	89,085,922	BAT 3	10,497,919	BAT 3	78,588,004
		Incr BAT 1 &2	(632,532)	Incr BAT 1 &2	(4,808,151)
		Incr BAT 3	891,002	Incr BAT 3	6,592,999

WORKSHEET BB: NEW SOURCE DRILLING FLUID DISPOSAL LOADINGS BY REGION, OPTION, FLUID TYPE, AND LOCATION

879,710

879,710

0 100,387,607

Gulf of Mexico -- Lower WBF Failure Rate Onsite Zero Discharge Alternative Disposal Method Total Media Discharge Onsite Injection laul/ Onshore Disposa Pollutant Loadings Onsite (marine) Onshore All Media Baseline Discharges Disposal Totals wbf sbf 92,903,606 92,903,606 0 17,405,127 17,405,127 0 0 obf 1,256,728 1,256,728 0 0 110,308,733 111,565,461 total 1,256,728 0 BAT 1 wbf sbf 87,462,923 0 0 87,462,923 20,241,106 0 0 20,241,106 obf 0 628,364 628,364 0 total 107,704,029 628,364 108,332,393 -2,604,704 -628,364 (3,233,068) 0 BAT 2 wbf sbf obf 87,462,923 0 87,462,923 0 19,722,488 0 518,618 20,241,106 628,364 628,364 0 0 107,185,411 108,332,393 total 1,146,982 -3,123,322 -109,746 (3,233,068) BAT 3 100,387,607 100,387,607 wbf 0 0 sbf 0 2,852,661 2,852,661 0

12,005,645

115,245,913

-9,921,126

13,601,578

3,680,452

11,125,935

13,978,597

California -- Lower WBF Failure Rate

obf

total

		Onsite		native Disposal Method				
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf							
	sbf							
	obf							
	total							
BAT 1								
	wbf							
	sbf							
	obf							
	total					0		0 -
BAT 2								
	wbf							
	sbf							
	obf							
	total					0		0 -
BAT 3								
	wbf							
	sbf							
	obf							
	total					0		0 -

Cook Inlet, AK -- Lower WBF Failure Rate

		Onsite	Zero Discharge Alterr	ative Disposal Method	Total Media			
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf					-		
	sbf							
	obf							
	total							
BAT 1								
	wbf							
	sbf							
	obf							
	total					C)	-
BAT 2								
	wbf							
	sbf							
	obf							
	total					0)	-
BAT 3								
	wbf							
	sbf							
	obf							
	total					C)	-

Total -- Lower WBF Failure Rate

Total Lower WDI Tall		Onsite	Zero Discharge Alteri	native Disposal Method	Total Media			
		Discharge	Onsite Injection	laul/ Onshore Disposa		Onsite (marine)	Onshore	All Media
Baseline			,	·	Ü	Discharges	Disposal	Totals
	wbf	92,903,606	0	0	92,903,606	•	·	
	sbf	17,405,127	0	0	17,405,127			
	obf	0	0	1,256,728	1,256,728			
	total	110,308,733	0	1,256,728	111,565,461			
BAT 1								
	wbf	87,462,923	0	0	87,462,923			
	sbf	20,241,106	0	0	20,241,106			
	obf	0	0	628,364	628,364			
	total	107,704,029	0	628,364	108,332,393	-2,604,704	-628,364	(3,233,068
BAT 2								
	wbf	87,462,923	0	0	87,462,923			
	sbf	19,722,488	0	518,618	20,241,106			
	obf	0	0	628,364	628,364			
	total	107,185,411	0	1,146,982	108,332,393	-3,123,322	-109,746	(3,233,068
BAT 3								
	wbf	100,387,607	0	0	100,387,607			
	sbf	0	0	2,852,661	2,852,661			
	obf	0	879,710	11,125,935	12,005,645			
	total	100,387,607	879,710	13,978,597	115,245,913	-9,921,126	13,601,578	3,680,452

INCREMENTAL LOADINGS (REDUC	TIONS)	Lower WBF Failure Rate, New Sources			
		Onsite	Zero Discharge Altern	ative Disposal Method	Total Media
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings
Baseline					
	wbf				
	sbf				
	obf				
	total				
BAT 1	<u></u>				
	wbf	-5,440,683	0	0	-5,440,683
	sbf	2,835,979	0	0	2,835,979
	obf	0	0	-628,364	-628,364
	total	-2,604,704	0	-628,364	-3,233,068
BAT 2	_				
	wbf	-5,440,683	0	0	-5,440,683
	sbf	2,317,361	0	518,618	2,835,979
	obf	0	0	-628,364	-628,364
	total	-3,123,322	0	-109,746	-3,233,068
BAT 3	_				
	wbf	7,484,001	0	0	7,484,001
	sbf	-17,405,127	0	2,852,661	-14,552,466
	obf	0	879,710	9,869,207	10,748,917
	total	-9,921,126	879,710	12,721,869	3,680,452

SUMMARY TOTAL LOADINGS (REDU	CTIONS):	Lower WBF Failure Rate, New Sources				
		Onsite	Zero Discharge Alter	Zero Discharge Alternative Disposal Method		
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	
Baseline	total	110,308,733	0	1,256,728	111,565,461	
BAT 1	total	107,704,029	0	628,364	108,332,393	
BAT 2	total	107,185,411	0	1,146,982	108,332,393	
BAT 3	total	100,387,607	879,710	13,978,597	115,245,913	

SUMMARY INCREMENTAL LOADINGS (REDUCTIONS):			Lower WBF Failure Rate, New Sources			
			Zero Discharge Altern	native Disposal Method	Total Media	
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	
Baseline		NA	NA	NA	NA	
BAT 1	total	-2,604,704	0	-628,364	-3,233,068	
BAT 2	total	-3,123,322	0	-109,746	-3,233,068	
BAT 3	total	-9,921,126	879,710	12,721,869	3,680,452	

WORKSHEET CC: NEW AND EXISTING SOURCE DRILLING FLUID DISPOSAL LOADINGS BY REGION, OPTION, FLUID TYPE, AND LOCATION Gulf of Mexico -- Lower WBF Failure Rate

Guit of Mexico Lower WBF Failui	ie ivaie							
		Onsite	Zero Discharge Altern	ative Disposal Method	Total Media			
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf	2,185,987,899	0	0	2,185,987,899			
	sbf	255,295,955	0	0	255,295,955			
	obf	0	11,862,178	48,705,439	60,567,617			
	total	2,441,283,854	11,862,178	48,705,439	2,501,851,471			
BAT 1								
	wbf	2,050,964,806	0	0	2,050,964,806			
	sbf	279,869,420	0	0	279,869,420			
	obf	0	7,092,172	28,997,053	36,089,225			
	total	2,330,834,226	7,092,172	28,997,053	2,366,923,451	-110,449,628	-24,478,392	(134,928,020)
BAT 2								
	wbf	2,050,964,806	0	0	2,050,964,806			
	sbf	271,789,237	0	8,080,183	279,869,420			
	obf	0	7,092,172	28,997,053	36,089,225			
	total	2,322,754,043	7,092,172	37,077,236	2,366,923,451	-118,529,811	-16,398,209	(134,928,020)
BAT 3								
	wbf	2,244,509,591	0	0	2,244,509,591			
	sbf	0	0	22,618,880	22,618,880			
	obf	0	36,980,946	215,992,842	252,973,788			
	total	2,244,509,591	36,980,946	238,611,723	2,520,102,259	-196,774,263	215,025,051	18,250,789

California -- Lower WBF Failure Rate

		Onsite	Zero Discharge Altern	ative Disposal Method	Total Media			
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf	9,617,040	0	0	9,617,040	-	•	
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188			
BAT 1								
	wbf	9,617,040	0	0	9,617,040			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188	0		-
BAT 2								
	wbf	9,617,040	0	0	9,617,040			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188	0		-
BAT 3								
	wbf	9,617,040	0	0	9,617,040			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	9,617,040	1,945,148	0	11,562,188	0		-

Alaska -- lower WBF Failure Rate

Alaska lower WBF Failure Rate		Onsite	Zero Discharge Altern	native Disposal Method	Total Media			
		Discharge		laul/ Onshore Disposa		Onsite (marine)	Onshore	All Media
Baseline		Ŭ	,	· ·	J	Discharges	Disposal	Totals
	wbf	8,407,772	0	0	8,407,772		•	
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	8,407,772	1,945,148	0	10,352,920			
BAT 1								
	wbf	8,407,772	0	0	8,407,772			
	sbf	552,796	0	0	552,796			
	obf	0	1,316,784	0	1,316,784			
	total	8,960,568	1,316,784	0	10,277,352	552,796	-628,364	(75,568)
BAT 2								
	wbf	8,407,772	0	0	8,407,772			
	sbf	536,696	16,100	0	552,796			
	obf	0	1,316,784	0	1,316,784			
	total	8,944,468	1,332,884	0	10,277,352	536,696	-612,264	(75,568)
BAT 3								
	wbf	8,407,772	0	0	8,407,772			
	sbf	0	0	0	0			
	obf	0	1,945,148	0	1,945,148			
	total	8,407,772	1,945,148	0	10,352,920	0	0	-

TOTAL -- Lower Failure Rate

		Onsite	Zero Discharge Altern	ative Disposal Method	Total Media			
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	Onsite (marine)	Onshore	All Media
Baseline						Discharges	Disposal	Totals
	wbf	2,204,012,710	0	0	2,204,012,710			
	sbf	255,295,955	0	0	255,295,955			
	obf	0	15,752,474	48,705,439	64,457,913			
	total	2,459,308,665	15,752,474	48,705,439	2,523,766,578			
BAT 1								
	wbf	2,068,989,617	0	0	2,068,989,617			
	sbf	280,422,216	0	0	280,422,216			
	obf	0	10,354,104	28,997,053	39,351,157			
	total	2,349,411,833	10,354,104	28,997,053	2,388,762,990	-109,896,832	-25,106,756	(135,003,588)
BAT 2								
	wbf	2,068,989,617	0	0	2,068,989,617			
	sbf	272,325,933	16,100	8,080,183	280,422,216			
	obf	0	10,354,104	28,997,053	39,351,157			
	total	2,341,315,550	10,370,204	37,077,236	2,388,762,990	-117,993,115	-17,010,473	(135,003,588)
BAT 3								
	wbf	2,262,534,402	0	0	2,262,534,402			
	sbf	0	0	22,618,880	22,618,880			
	obf	0	40,871,242	215,992,842	256,864,084			
	total	2,262,534,402	40,871,242	238,611,723	2,542,017,367	-196,774,263	215,025,051	18,250,789

INCREMENTAL LOADINGS (REDUCT)	ALL SOURCES, Low	er WBF Failure Rate			
		Onsite	Zero Discharge Altern	ative Disposal Method	Total Media
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings
Baseline					
	wbf				
	sbf				
	obf				
	total				
BAT 1					
	wbf	-135,023,093	0	0	-135,023,093
	sbf	25,126,261	0	0	25,126,261
	obf	0	-5,398,370	-19,708,386	-25,106,756
	total	-109,896,832	-5,398,370	-19,708,386	-135,003,588
BAT 2					
	wbf	-135,023,093	0	0	-135,023,093
	sbf	17,029,978	16,100	8,080,183	25,126,261
	obf	0	-5,398,370	-19,708,386	-25,106,756
	total	-117,993,115	-5,382,270	-11,628,203	-135,003,588
BAT 3					
	wbf	58,521,692	0	0	58,521,692
	sbf	-255,295,955	0	22,618,880	-232,677,075
	obf	0	25,118,768	167,287,403	192,406,171
	total	-196,774,263	25,118,768	189,906,284	18,250,789

SUMMARY TOTAL LOADINGS (REDU	CTIONS)		ALL SOURCES, Lower WBF Failure Rate			
			Zero Discharge Alterr	native Disposal Method	Total Media	
		Discharge	Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings	
Baseline	total	2,459,308,665	15,752,474	48,705,439	2,523,766,578	
BAT 1	total	2,349,411,833	10,354,104	28,997,053	2,388,762,990	
BAT 2	total	2,341,315,550	10,370,204	37,077,236	2,388,762,990	
		, The state of the				
BAT 3	total	2,262,534,402	40,871,242	238,611,723	2,542,017,367	

SUMMARY INCREMENTAL LOADING	S (REDUCTION	ALL SOURCES, Lower WBF Failure Rate			
			Zero Discharge Alter	Total Media	
			Onsite Injection	laul/ Onshore Disposa	Pollutant Loadings
Baseline		NA	NA	NA	NA
BAT 1	total	-109,896,832	-5,398,370	-19,708,386	-135,003,588
BAT 2	total	-117,993,115	-5,382,270	-11,628,203	-135,003,588
BAT 3	total	-196,774,263	25,118,768	189,906,284	18,250,789

SBF Drilling Waste Pollutant Concentrations

Pollutant Name	Average Conce	entration of Pollutants	Reference
	in Dr	illing Waste	
Conventional Pollutants		lbs/bbl-drilling fluid	
Total Oil as SBF Basefluid		190.491	Derived from SBF
Total Oil as Formation Oil		0.588	formulation and densities
Total Oil (SBF Basefluid + Form. Oil)		191.079	(see "Model Well Input
TSS as barite		133.749	Data" worksheet) **
Priority Pollutant Organics	mg/ml *	lbs/bbl-drilling fluid	
Naphthalene	1.43	0.0010024	Calculated from diesel
Fluorene	0.78	0.0005468	oil composition in
Phenanthrene	1.85	0.0012968	Offshore Dev. Doc.,
Phenol (ug/g)	6	0.000003528	Table VII-9 **
Priority Pollutants, Metals	mg/kg-barite	lbs/lb-dry SBF ***	
Cadmium	1.1		Offshore Dev. Doc.,
Mercury	0.1	0.000001	Table XI-6
Antimony	5.7	0.000057	
Arsenic	7.1	0.000071	
Berylium	0.7	0.000007	
Chromium	240.0	0.0002400	
Copper	18.7	0.0000187	
Lead	35.1	0.0000351	
Nickel	13.5	0.0000135	
Selenium	1.1	0.0000011	
Silver	0.7	0.0000007	
Thallium	1.2	0.0000012	
Zinc	200.5	0.0002005	
Non-Conventional Pollutants	mg/kg-barite	lbs/lb-dry SBF ***	
Aluminum	9,069.9	0.0090699	Offshore Dev. Doc.,
Barium ****	588,000	0.5880000	Table XI-6
Iron	15,344.3	0.0153443	
Tin	14.6	0.0000146	
Titanium	87.5	0.0000875	
	mg/ml *	lbs/bbl-drilling fluid	
Alkylated benzenes	8.05		Calculated from diesel
Alkylated naphthalenes	75.68		oil composition in
Alkylated fluorenes	9.11		Offshore Dev. Doc.,
Alkylated phenanthrenes	11.51	0.0080683	Table VII-9 **
Alkylated phenols (ug/g)	52.9	0.0000311	
Total biphenyls	14.96	0.0104867	
Total dibenzothiophenes (ug/g)	760	0.0004469	

^{*} Except where noted

^{**} Includes assumption of 0.2% formation oil contamination

^{***} The dry weight (lbs) of the barite component in a SBF is equivalent to the term "lb-dry SBF"

^{****} Barium is derived from assumptions list on Page XI-8, Offshore Dev. Doc.

[i.e. barite is pure barium sulfate (BaSO4) and by molecular weights barium sulfate is 58.8% by weight barium]

WORKSHEET No. O:

Revised Drilling Fluid Well Counts, to include Water-base Fluid wells

(well counts reflect number of wells < USING > not hauling or discharging the mud types listed)

		Baseline	BAT 1	BAT 2	BAT 3
% OBF > SBF	GOM	0%	40%	40%	0%
	CA	20%	40%	40%	0%
	AK	20%	40%	40%	0%
% WBF > SBF	GOM	0%	6%	6%	0%
	CA	0%	6%	6%	0%
	AK	0%	6%	6%	0%

BASELINE

Existing Sources

SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOTA	LS
WBF	Gulf of Mexico	511	298	12	36	857	
SBF	Gulf of Mexico	86	51	16	48	201	
OBF	Gulf of Mexico	42	25	0	0	67	1,125
WBF	Offshore California	3	2	0	0	5	
SBF	Offshore California	0	0	0	0	-	
OBF	Offshore California	1	1	0	0	2	7
WBF	Cook Inlet, Alaska	3	1	0	0	4	
SBF	Cook Inlet, Alaska	0	0	0	0	-	
OBF	Cook Inlet, Alaska	1	1	0	0	2	6
							1 138

New Sources

SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOT	ALS
WBF	Gulf of Mexico	27	0	11	0	38	
SBF	Gulf of Mexico	5	0	15	0	20	
OBF	Gulf of Mexico	2	0	0	0	2	60
WBF	Offshore California	0	0	0	0	-	
SBF	Offshore California	0	0	0	0	-	
OBF	Offshore California	0	0	0	0	-	-
WBF	Cook Inlet, Alaska	0	0	0	0	-	
SBF	Cook Inlet, Alaska	0	0	0	0	-	
OBF	Cook Inlet, Alaska	0	0	0	0	-	-
Note: By definition "ex	xploratory" wells are exclud	led from the "new	sources" categor	У			60
							1,198

BAT OPT 1

Existing Sources

SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOTA	LS
WBF	Gulf of Mexico	479	279	11	34	803	
SBF	Gulf of Mexico	124	74	17	49	264	
OBF	Gulf of Mexico	25	15	0	0	40	1,107
WBF	Offshore California	3	2	0	0	5	
SBF	Offshore California	0	0	0	0	-	
OBF	Offshore California	1	1	0	0	2	7
WBF	Cook Inlet, Alaska	3	1	0	0	4	
SBF	Cook Inlet, Alaska	1	0	0	0	1	
OBF	Cook Inlet, Alaska	0	1	0	0	1	6
							1,120

New Sources

INCW OULLES							
SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOT	ALS
WBF	Gulf of Mexico	25	0	10	0	35	
SBF	Gulf of Mexico	8	0	16	0	24	
OBF	Gulf of Mexico	1	0	0	0	1	60
WBF	Offshore California	0	0	0	0	-	
SBF	Offshore California	0	0	0	0	-	
OBF	Offshore California	0	0	0	0	-	-
WBF	Cook Inlet, Alaska	0	0	0	0	-	
SBF	Cook Inlet, Alaska	0	0	0	0	-	
OBF	Cook Inlet, Alaska	0	0	0	0	-	-

Note: By definition "exploratory" wells are excluded from the "new sources" category

60 1,180

BAT OPT 2

Existing Sources

SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOTA	ALS
WBF	Gulf of Mexico	479	279	11	34	803	
SBF	Gulf of Mexico	124	74	17	49	264	
OBF	Gulf of Mexico	25	15	0	0	40	1,107
WBF	Offshore California	3	2	0	0	5	
SBF	Offshore California	0	0	0	0	-	
OBF	Offshore California	1	1	0	0	2	7
WBF	Cook Inlet, Alaska	3	1	0	0	4	
SBF	Cook Inlet, Alaska	1	0	0	0	1	
OBF	Cook Inlet, Alaska	0	1	0	0	1	6
							1 120

New Sources

11011 0001000								
SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOTA	ALS	
WBF	Gulf of Mexico	25	0	10	0	35		
SBF	Gulf of Mexico	8	0	16	0	24		
OBF	Gulf of Mexico	1	0	0	0	1	60	
WBF	Offshore California	0	0	0	0	-		
SBF	Offshore California	0	0	0	0	-		
OBF	Offshore California	0	0	0	0	-	-	
WBF	Cook Inlet, Alaska	0	0	0	0	-		
SBF	Cook Inlet, Alaska	0	0	0	0	-		
OBF	Cook Inlet, Alaska	0	0	0	0	-	-	
Note: By definition "exploratory" wells are excluded from the "new sources" category								

1,180

BAT OPT 3

Existing Sources

SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOTA	LS
WBF	Gulf of Mexico	511	298	17	51	877	
SBF	Gulf of Mexico	0	0	3	8	11	
OBF	Gulf of Mexico	128	76	8	25	237	1,125
WBF	Offshore California	3	2	0	0	5	
SBF	Offshore California	0	0	0	0	-	
OBF	Offshore California	1	1	0	0	2	7
WBF	Cook Inlet, Alaska	3	1	0	0	4	
SBF	Cook Inlet, Alaska	0	0	0	0	-	
OBF	Cook Inlet, Alaska	1	1	0	0	2	6
						_	1,138

New Sources

New Sources							
SBF/OBF/WBF	Region	SWD	SWE	DWD	DWE	TOTA	LS
WBF	Gulf of Mexico	27	0	15	0	42	
SBF	Gulf of Mexico	0	0	3	0	3	
OBF	Gulf of Mexico	7	0	8	0	15	60
WBF	Offshore California	0	0	0	0	-	
SBF	Offshore California	0	0	0	0	-	
OBF	Offshore California	0	0	0	0	-	-
WBF	Cook Inlet, Alaska	0	0	0	0	-	
SBF	Cook Inlet, Alaska	0	0	0	0	-	
OBF	Cook Inlet, Alaska	0	0	0	0	-	-
	·					-	

Note: By definition "exploratory" wells are excluded from the "new sources" category

1,198

WORKSHEET No. P: Drilling Fluid Well Counts, including Water-base Fluids Wells

		% Total		0/ 514/							
		Wells by		% DW Wells by			No. SW Wells			Background i counts from I	
	7.11	DF-type	Wells	DF-type	DWD	DWE	Rem'g	SWD	SWE	EPA counts	are ignored.
Background indicates data from L Henry	Total Annual % of SW wells	_	1,127	1	48 38.7%	76 61.3%	1,003	645 64.3%	358 35.7%	but %Dev & % to industry data	, which given
response to CAJ questions	DF-type WBF	80%	902	25%	12	19	871	560	311	only at shallov	v+deep level.
4	SBF	10%	113	75%	36	57	20	13	7		
	OBF	10%	112	0%	0	0	112	72	40		
	% Total Wells: Existing Sources:				50%	100%		95%	100%		
	New Sources:				50%	0%		5%	0%		
(new+existing sources) GM - Deep GM - Shal	Existing Sources:	BASELINE D	ISCHARGE	S							
59 83					12 0	36 0		511 0	298 0	857 0	857
79 14	2 SBF				16	48		86	51	201	201
- 6	OBF>SBF(a) OBF(a)				0	0		0 42	0 25	0 67	67
138 1,04	7 WBF+OBF>SBF(a)	DACEL INE D	ICCUAROE		0	0		0	0	1,125	
GM 59 83		BASELINE D	JOUNANGE	.s 	11	0		27	0	38	38
79 14	WBF>SBF(a) 2 SBF				0 15	0		0 5	0	0 20	20
	OBF>SBF(a)				0	0		0	0	0	
138 1,04	09 OBF(a) 7 WBF+OBF>SBF(a)				0	0		2 0	0	60	2 1,185
	(a) Estimate repres an assumed			of WBF wells	assumed to conv to SBF.	vert to SBF und	der the baselir	ne scenario, plu	IS		
					0	-1		-11	-6		'
GM	Adj't for well red'n, er Existing Sources:	BAT OPT 1	DISCHARG	ES							
	WBF WBF>SBF(b)				11 1	34 2		479 32	279 19	803 54	803
	SBF(b)				16	47		75	45	183	264
	OBF>SBF(b) OBF(b)				0 0	0		17 25	10 15	27 40	40
GM	WBF+OBF>SBF(b) New Sources:	BAT OPT 1	DISCHARG	FS	1	2		49	29	1,107	
O.III	WBF]	DIOONARO		10	0		25	0	35	35
	WBF>SBF(b) SBF(b)				1 15	0		2 5	0	3 20	24
	OBF>SBF(b) OBF(b)				0	0		1 1	0	1	1
	WBF+OBF>SBF(b)				1	0		3	0	60	1,167
	(b) Estimate repres an assumed			40% of WBF wells	assumed to conv to SBF.	vert to SBF und	der any discha	arge options, plu	JS		
					28 28	84 84		639 639	374 374		
GM	Existing Sources:	BAT OPT 2	DISCHARG	ES							
	WBF WBF>SBF(b)				11 1	34 2		479 32	279 19	803 54	803
	SBF(b) OBF>SBF(b)				16 0	47 0		75 17	45 10	183 27	264
	OBF(b)				0	0		25	15	40	40
GM	WBF+OBF>SBF(b) New Sources:	BAT OPT 2	DISCHARG	ES	111	2		49	29	1,107	
	WBF WBF>SBF(b)				10 1	0		25 2	0	35 3	35
	SBF(b)				15	0		5	0	20	24
	OBF>SBF(b) OBF(b)				0	0		1	0	1 1	1
	WBF+OBF>SBF(b) (b) Estimate repres	nente ORF well		40%	1	0	dar anı diaaha	3	0	60	1,167
	an assumed			of WBF wells	assumed to conv to SBF.	vert to SBF und	uer arry discria	arge options, pit	us		
					28 28	84 84		639 639	374 374		
GM	Existing Sources:	BAT OPT 3 (ZERO DISC	HARGE)							
(.6 WBF WBF>SBF(c)				17 0	51 0		511 0	298 0	877 0	877
(.1 SBF(c) OBF>SBF(c)				3 0	8 0		0 0	0	11 0	11
(.3 OBF(c)				8	25		128	76	237	237
GM	WBF+OBF>SBF(c) New Sources:	BAT OPT 3 (ZERO DISC	HARGE)	0	0		0	0	1,125	
	.6 WBF WBF>SBF(c)]		•	15 0	0		27 0	0	42 0	42
(.1 SBF(c)				3	0		0	0	3	3
(OBF>SBF(c)				0 8	0		0 7	0	0 15	15
	WBF+OBF>SBF(c)	conto OPF"	c -	00/	0	0	dor zoro dio-L	0	0	60	1,185
	(c) Estimate repres an assumed		s = 0%		assumed to conv	VEIL IO SBF UN	uei zeio disch	arge option, pit	19		

	CALIFORNIA OPER	ATIONS									
Background indicates data from L Henry	CALIFORNIA OPERA	% Total Wells by		% DW Wells by			No. SW Wells			well coun	nd indicates is from EPA
response to CAJ questions	Total Annual	DF-type	Wells 26	DF-type	DWD 15	DWE 0	Rem'g 11	SWD 11	SWE 0	NODA; cou but %s D & E	
questions	WBF (d)		20		25.0%	25.0%	'''	86.8%	86.8%	industry dat	a given only
	SBF (d) OBF (d)				0% 75.0%	75.0%		0% 13.2%	0% 13.2%	at shallow-	+deep level.
	OBF (d)				75.0%	75.0%		13.2%	13.2%		
04 0	E :	DAGE! INE	DIOCULADOR						-		
CA - Deep CA - Shal	Existing Sources: 5 WBF	BASELINE	DISCHARGE	:5	0	0		3	2	5	5
	WBF>SBF(a)				0	0		0	0	0	
0	0 SBF OBF>SBF(a)				0	0		0	0	0	0
0	2 OBF				0	0		1	1	2	2
	7 WBF+OBF>SBF(a)	DACELINE	DISCUADOR	C (-)	0	0		0	0	7	
CA	New Sources: WBF	BASELINE	DISCHARGE	:S (e)	0	0		0	0	0	0
	WBF>SBF(a)				0	0		0	0	0	
	SBF OBF>SBF(a)				0	0		0	0	0	0
	OBF				0	0		0	0	ő	0
	WBF+OBF>SBF(a)			000/	0	0		. 0	0	0	7
	(a) Estimate repres an assumed			20% of WBF wells	assumed to constant	vert to SBF un	der the baselir	ne scenario, più	ıs		
	(d) Currently, no SI	BF is used in	California ope	erations; esti	mated percentage	e of OBF+SBF	usage for dee	ep- and			
					kico usage data.						
	(e) There are no ne	w sources p	rojected for Ca	alliornia opei	rations.						
CA	Existing Sources:	BAT OPT	1 DISCHARG	ES							
	WBF				0	0		3	2	5	5
	WBF>SBF(b) SBF(b)				0	0		0	0	0	0
	OBF>SBF(b)				0	0		0	0	0	U
	OBF(b)				0	0		1	1	2	2
CA	WBF+OBF>SBF(b) New Sources:	BAT OPT	1 DISCHARG	FS	0	0		0	0	7	
OA .	WBF	DAT OF T	DIOGNAMO		0	0		0	0	0	0
	WBF>SBF(b) SBF(b)				0	0		0	0	0	0
	OBF>SBF(b)				0	0		0	0	0	U
	OBF(b)				0	0		0	0	0	0
	WBF+OBF>SBF(b) (b) Estimate repres	sents OBF we	ells =	40%	assumed to con-	vert to SBF un	der anv discha	orge options, pl	us 0	0	7
	an assumed			of WBF wells				90,			
											ı
CA	Existing Sources:	BAT OPT	2 DISCHARG	ES							
	WBF WBF>SBF(b)				0	0		3 0	2 0	5 0	5
	SBF(b)				0	0		0	0	0	0
	OBF>SBF(b)				0	0		0	0	0	
	OBF(b) WBF+OBF>SBF(b)				0	0		1 0	1	2 7	2
CA	New Sources:	BAT OPT	2 DISCHARG	ES							
	WBF WBF>SBF(b)				0	0		0	0	0	0
	SBF(b)				0	0		0	0	0	0
	OBF>SBF(b)				0	0		0	0	0	
	OBF(b) WBF+OBF>SBF(b)				0	0		0	0	0	0
	(b) Estimate repres	sents OBF we	ells =	40%	assumed to con		der any discha			O	1
	an assumed	6%	conversion	of WBF wells	s to SBF.						
CA	Existing Sources:	BAT OPT 3	(ZERO DISC	HARGE)							
	WBF WBF>SBF(c)				0	0		3 0	2 0	5 0	5
	SBF(c)				0	0		0	0	0	0
	OBF>SBF(c) OBF(c)				0	0		0 1	0	0 2	2
	WBF+OBF>SBF(c)				0	0		0	0	7	
CA	New Sources:	BAT OPT 3	(ZERO DISC	HARGE)							
	WBF WBF>SBF(c)				0	0		0	0	0	0
	SBF(c)				0	0		0	0	0	0
	OBF>SBF(c) OBF(c)				0	0		0	0	0	0
	WBF+OBF>SBF(c)				0	0		0	0	0	7
	(c) Estimate repres			0%	assumed to con-		der zero disch			-	
	an assumed	0%	conversion	of WBF wells	s to SBF.						

	ALASKA (COOK INL	ET) OPERAT	IONS								
Background indicates data from L Henry		% Total Wells by DF-type	Wells	% DW Wells by DF-type	DWD	DWE	No. SW Wells Rem'g	SWD	SWE	well co	ound indicates unts from EPA ounts ignored
response to CAJ	Total Annual	,, -, -, -, -, -, -, -, -, -, -, -, -,	8		1	0		7	0	but %s D 8	E applied to
questions	WBF (d) SBF (d)				25.0% 0%	25.0% 0%		86.8% 0%	86.8% 0%		ata given only w+deep level.
	OBF (d)				75.0%	75.0%		13.2%	13.2%	at Shahe	Wracep level.
AK - Deep AK - Shal	Existing Sources:	BASELINE D	ISCHARGE	·s							1
	WBF	DAGELINE E	JOURNOL	.0	0	0		3	1	4	4
	WBF>SBF(a)				0	0		0	0	0	_
0 (OBF>SBF(a)				0	0		0	0	0	0
0 2	OBF				0	0		1	1	2	2
	WBF+OBF>SBF(a)				0	0		0	0	6	
AK	New Sources: WBF	BASELINE D	DISCHARGE	:S (e)	0	0		0	0	0	0
	WBF>SBF(a)				0	0		0	0	0	Ü
	SBF				0	0		0	0	0	0
	OBF>SBF(a) OBF				0	0		0	0	0	0
	WBF+OBF>SBF(a)				0	0		0	0	0	6
	(a) Estimate repres an assumed			20% of WBF wells	assumed to co	nvert to SBF ur	nder the basel	ine scenario, pl	us		
	(d) Currently, no St					ge of OBF+SB	F usage for de	eep- and			ı
	shallow-water v	vells are based	d on available	e Gulf of Mex	ico usage data.	•	Ü	·			
	(e) There are no ne	w sources pro	jected for Co	ook Inlet ope	rations.						
										1	
	F : 0 C	DAT 6									
AK	Existing Sources: WBF	BAT OPT 1 I	DISCHARGI	ES	0	0		3	1	4	4
	WBF>SBF(b)				0	0		0	0	0	*
	SBF(b)				0	0		0	0	0	1
	OBF>SBF(b) OBF(b)				0	0		1	0	1	1
	WBF+OBF>SBF(b)				0	0		1	0	6	•
AK	New Sources: WBF	BAT OPT 1	DISCHARG	ES	0	0		0	0	0	0
	WBF>SBF(b)				0	0		0	0	0	U
	SBF(b)				0	0		0	0	0	0
	OBF>SBF(b) OBF(b)				0	0		0	0	0	0
	WBF+OBF>SBF(b)				0	0		0	0	0	6
	(b) Estimate repres			40%		nvert to SBF un	nder any disch	arge options, p	lus		
	an assumed	6%	conversion	of WBF wells	s to SBF.						
AK	Existing Sources:	BAT OPT 2	DISCHARG	ES							
	WBF				0	0		3	1	4	4
	WBF>SBF(b) SBF(b)				0	0		0	0	0	1
	OBF>SBF(b)				0	0		1	0	1	
	OBF(b)				0	0		0	1	1	1
AK	WBF+OBF>SBF(b) New Sources:	BAT OPT 2	DISCHARG	FS	0	0		1_	0	6	
	WBF				0	0		0	0	0	0
	WBF>SBF(b) SBF(b)				0	0		0	0	0	0
	OBF>SBF(b)				0	0		0	0	0	U
	OBF(b)				0	0		0	0	0	0
	WBF+OBF>SBF(b) (b) Estimate repres	ente ORE well	le =	40%	0	0 Overt to SRE un	der any disch	narge options, p	0 lue	0	6
	an assumed			of WBF wells		IVEIT TO ODI UI	idel ally discil	iarge options, p	ius		
A I/	Existing Sources:	BAT OPT 3 (ZERO DISC	HARGE)							
AK	WBF WBF>SBF(c)				0	0		3 0	1 0	4 0	4
	SBF(c)				0	0		0	0	0	0
	OBF>SBF(c) OBF(c)				0	0		0	0	0 2	2
	WBF+OBF>SBF(c)				0	0		0	0	6	2
	New Sources:	BAT OPT 3 (ZERO DISC	HARGE)							
AK	WBF WBF>SBF(c)				0	0		0	0	0	0
	SBF(c)				0	0		0	0	0	0
	OBF>SBF(c)				0	0		0	0	0	
	OBF(c) WBF+OBF>SBF(c)				0	0		0	0	0	0 6
	(c) Estimate repres	ents OBF well	ls =	0%			nder zero discl	harge option, pl		U	
	an assumed			of WBF wells							

WORKSHEET Q: Gulf of Mexico Regional Annual Total SBF Pollutant Loadings (lbs) Existing Sources

Baseline Annual Total Pollutant Loadings Summary

Baseline	Shallow Wat	er (<1,000 ft)	Deep Water (>1,000 ft)			
Technology	Development	Exploratory	Development	Exploratory	Total	Notes
						Total Wells = 201 SBF wells (from worksheet Well
Discharge w/10.2% retention	54,039,305	67,155,986	15,214,194	101,481,343	237,890,828	Count Input Data)
						Total Wells = 67 OBF wells (from worksheet Well
Zero Discharge of OBF-wastes	0	0	0	0	0	Count Input Data)

BAT Annual Total Pollutant Loadings Summary

BAT/NSPS Technology	Shallow Wat	er (<1,000 ft)	Deep Water (>1,000 ft)			
Option *	Development	Exploratory	Development	Exploratory	Total	Notes
BAT/NSPS Option 1						Total Wells = 201 SBF wells + 67 OBF wells (from
(Discharge w/4.03% retention)	68,546,728	85,723,524	14,221,049	91,137,013	259,628,314	worksheet Well Count Input Data)
BAT/NSPS Option 2						Total Wells = 201 SBF wells + 67 OBF wells (from
(Discharge w/3.82% retention)	66,550,333	83,226,863	13,806,867	88,482,686	252,066,749	worksheet Well Count Input Data)
						Total Wells = 201 SBF wells (from worksheet Well
Zero Discharge of SBF-wastes	0	0	0	0	0	Count Input Data)

^{*} EPA assumes that operators will switch from OBF to SBF under both BAT/NSPS discharge options

Incremental Annual Total Pollutant Loadings (Reductions) Summary **

Technology Option	Shallow Wat	er (<1,000 ft)	Deep Wate	er (>1,000 ft)		
	Development	Exploratory	Development	Exploratory	Total	Notes
Discharge w/10.2% retention	0	0	0	0	0	No reduction between baseline and current practice
BAT/NSPS Option 1 (Discharge w/4.03% retention)	14,507,423	18,567,538	(993,145)	(10,344,330)	21,737,486	Difference between BAT Option 1 loadings and baseline loadings (negative incremental loadings indicate reductions)
BAT/NSPS Option 2 (Discharge w/3.82% retention)	12,511,029	16,070,877	(1,407,327)	(12,998,657)		Difference between BAT Option 2 loadings and baseline loadings (negative incremental loadings indicate reductions)
Zero Discharge of SBF-wastes	(54,039,305)	(67,155,986)	(15,214,194)	(101,481,343)	(237,890,828)	Difference between zero discharge BAT loadings and baseline 10.20% discharge loadings from the 201 wells currently using SBF (negative incremental loadings indicate reductions)

^{**} Incremental Loadings (Reductions) = Technology Option Loadings - Baseline Loadings.

California Offshore Regional Annual Total SBF Pollutant Loadings Summary (Ibs) Existing Sources

Baseline Annual Total Pollutant Loadings Summary

Baseline	Shallow Water (<1,000 ft)		Deep Wate	er (>1,000 ft)		
Technology	Development	Exploratory	Development	Exploratory	Total	Notes
Zero Discharge of SBF & OBF-						Total Wells = 0 SBF wells (from worksheet Well
wastes (Current Practice)	0	0	0	0	0	Count Input Data)

BAT Annual Total Pollutant Loadings Summary

BAT/NSPS Technology	Shallow Wat	er (<1,000 ft)	Deep Water (>1,000 ft)			
Option *	Development	Exploratory	Development	Exploratory	Total	Notes
BAT/NSPS Option 1 (Discharge w/4.03% retention)	0	0	0	0	0	Total Wells = 0 SBF wells + 2 OBF wells (from worksheet Well Count Input Data)
BAT/NSPS Option 2 (Discharge w/3.82% retention)	0	0	0	0		Total Wells = 0 SBF wells + 2 OBF wells (from worksheet Well Count Input Data)
Zero Discharge of SBF-wastes	0	0	0	0		Total Wells = 0 SBF wells (from worksheet Well Count Input Data)

^{*} EPA assumes that operators will switch from OBF to SBF under both BAT/NSPS discharge options

Incremental Annual Total Pollutant Loadings (Reductions) Summary **

Technology Option	Shallow Wat	er (<1,000 ft)	Deep Water (>1,000 ft)			
	Development	Exploratory	Development	Exploratory	Total	Notes
Zero Discharge of SBF & OBF- wastes (Current Practice)	0	0	0	0	0	No reduction between baseline and current practice
BAT/NSPS Option 1 (Discharge w/4.03% retention)	0	0	0	0	0	Difference between BAT Option 1 loadings and baseline loadings (negative incremental loadings indicate reductions)
BAT/NSPS Option 2 (Discharge w/3.82% retention)	0	0	0	0	0	Difference between BAT Option 2 loadings and baseline loadings (negative incremental loadings indicate reductions)
Zero Discharge of SBF-wastes	0	0	0	0	0	Difference between zero discharge BAT loadings and baseline zero discharge loadings from the 0 wells currently using SBF (negative incremental loadings indicate reductions)

^{**} Incremental Loadings (Reductions) = Technology Option Loadings - Baseline Loadings.

Cook Inlet, Alaska, Regional Annual Total SBF Pollutant Loadings Summary (Ibs) Existing Sources

Baseline Annual Total Pollutant Loadings Summary

Baseline	Shallow Water (<1,000 ft)		Deep Wate	er (>1,000 ft)		
Technology	Development	Exploratory	Development	Exploratory	Total	Notes
Zero Discharge of SBF & OBF-						Total Well(s) = 4 SBF well(s) (from worksheet Well
wastes (Current Practice)	0	0	0	0	0	Count Input Data)

BAT Annual Total Pollutant Loadings Summary

BAT/NSPS Technology	Shallow Wat	er (<1,000 ft)	Deep Wate	er (>1,000 ft)			
Option *	Development	Exploratory	Development	Exploratory	Total	Notes	
BAT/NSPS Option 1						Total Well(s) = 4 SBF well(s) + 2 OBF well(s) (from	
(Discharge w/4.03% retention)	552,796	0	0	0	552,796	worksheet Well Count Input Data)	
BAT/NSPS Option 2						Total Well(s) = 4 SBF well(s) + 2 OBF well(s) (from	
(Discharge w/3.82% retention)	536,696	0	0	0	536,696	worksheet Well Count Input Data)	
						Total Well(s) = 4 SBF well(s) (from worksheet Well	
Zero Discharge of SBF-wastes	0	0	0	0	0	Count Input Data)	

^{*} EPA assumes that operators will switch from OBF to SBF under both BAT/NSPS discharge options

Incremental Annual Total Pollutant Loadings (Reductions) Summary **

Technology Option	Shallow Wat	er (<1,000 ft)	Deep Wate	er (>1,000 ft)		
	Development	Exploratory	Development	Exploratory	Total	Notes
Zero Discharge of SBF & OBF- wastes (Current Practice)	0	0	0	0	0	No reduction between baseline and current practice
BAT/NSPS Option 1 (Discharge w/4.03% retention)	552,796	0	0	0		Difference between BAT Option 1 loadings and baseline loadings (negative incremental loadings indicate reductions)
BAT/NSPS Option 2 (Discharge w/3.82% retention)	536,696	0	0	0		Difference between BAT Option 2 loadings and baseline loadings (negative incremental loadings indicate reductions)
Zero Discharge of SBF-wastes	0	0	0	0		Difference between zero discharge BAT loadings and baseline zero discharge loadings from the 4 well(s) currently using SBF (negative incremental loadings indicate reductions)

^{**} Incremental Loadings (Reductions) = Technology Option Loadings - Baseline Loadings.

Summary Pollutant Loadings (Reductions) for Management of SBF Cuttings, Existing Sources (Ibs)

Total Annual Baseline Pollutant Loadings

Baseline Technology	Gulf of Mexico	Offshore California	Cook Inlet, Alaska	Total	Notes
Discharge w/10.2% retention	237,890,828	N/A	N/A	237,890,828	Total Wells = 201 GOM SBF wells
Zero Discharge of OBF-wastes	0	0	0		Total Wells = 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells
Total	237,890,828	0	0		Total Wells = 201 GOM SBF wells + 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells

N/A - Not Applicable (as these regions currently do not allow SBF discharges)

Total Annual Compliance Pollutant Loadings

Technology Option	Gulf of Mexico	Offshore California	Cook Inlet, Alaska	Total	Notes *
Current Practice	237,890,828	0	0	237,890,828	Total Wells = 201 GOM SBF wells + 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells
BAT/NSPS Option 1 (Discharge w/4.03% retention)	259,628,314	0	552,796	260,181,110	Total Wells = 201 GOM SBF wells + 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells
BAT/NSPS Option 2 (Discharge w/3.82% retention)	252,066,749	0	536,696	252,603,445	Total Wells = 201 GOM SBF wells + 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells
Zero Discharge of SBF-wastes	0	0	0	0	Total Wells = 201 GOM SBF wells

^{*} EPA assumes that operators will switch from OBF to SBF under both BAT/NSPS discharge options

Total Annual Incremental Pollutant Loadings (Reductions)

Technology Option	Gulf of Mexico	Offshore California	Cook Inlet, Alaska	Total	Notes
Current Practice	0	0	0	0	Total Wells = 201 GOM SBF wells + 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells
BAT/NSPS Option 1 (Discharge w/4.03% retention)	21,737,486	0	552,796	22,290,282	Total Wells = 201 GOM SBF wells + 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells
BAT/NSPS Option 2 (Discharge w/3.82% retention)	14,175,921	0	536,696		Total Wells = 201 GOM SBF wells + 67 GOM OBF wells + 0 CA SBF wells + 2 CA OBF wells + 4 AK SBF well(s) + 2 AK OBF wells
Zero Discharge of SBF-wastes	(237,890,828)	N/A	N/A	(237,890,828)	Total Wells = 201 GOM SBF wells

N/A - Not Applicable (as these regions currently do not allow SBF discharges)

N/A - Not Applicable (as these regions currently do not allow SBF discharges)

WORKSHEET R:

Summary Dry Drill Cuttings and SBF Pollutant Loadings (Reductions) for Management of SBF Cuttings, Existing Sources (Ibs)

Total Annual Dry Drill Cuttings and SBF Baseline Pollutant Loadings

	Gulf of Mexico		Offshore California		Cook Inlet, Alaska		Total	
Baseline Technology	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF
Discharge w/10.2% retention	194,650,820	43,240,008	N/A	N/A	N/A	N/A	194,650,820	43,240,008
Zero Discharge of OBF-wastes	0	0	0	0	0	0	0	0
Total	194,650,820	43,240,008	0	0	0	0	194,650,820	43,240,008

N/A - Not Applicable (as these regions currently do not allow SBF discharges)

Total Annual Dry Drill Cuttings and SBF Compliance Pollutant Loadings

	Gulf of Mexico		Offshore	Offshore California		Cook Inlet, Alaska		al
Technology Option	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF
Current Practice	194,650,820	43,240,008	0	0	0	0	194,650,820	43,240,008
BAT/NSPS Option 1 (Discharge w/4.03% retention)	243,181,120	16,447,194	1,591,590	(1,591,590)	4,211,480	(3,658,684)	248,984,190	11,196,920
BAT/NSPS Option 2 (Discharge w/3.82% retention)	237,038,491	15,028,258	1,551,387	(1,551,387)	4,105,100	(3,568,404)	242,694,978	9,908,467
Zero Discharge of SBF-wastes	0	0	N/A	N/A	N/A	N/A	0	0

^{*} EPA assumes that operators will switch from OBF to SBF under both BAT/NSPS discharge options

Total Annual Dry Drill Cuttings and SBF Incremental Pollutant Loadings (Reductions)

	Gulf of Mexico		Offshore California		Cook Inle	t, Alaska	Tot	al
Current Practice	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF	Dry Drill Cuttings	SBF
Current Practice	0	0	0	0	0	0	0	0
BAT/NSPS Option 1 (Discharge w/4.03% retention)	48,530,300	(26,792,814)	1,591,590	(1,591,590)	4,211,480	(3,658,684)	54,333,370	(32,043,088)
BAT/NSPS Option 2 (Discharge w/3.82% retention)	42,387,671	(28,211,749)	1,551,387	(1,551,387)	4,105,100	(3,568,404)	48,044,158	(33,331,541)
Zero Discharge of SBF-wastes	(194,650,820)	(43,240,008)	N/A	N/A	N/A	N/A	(194,650,820)	(43,240,008)

N/A - Not Applicable (as these regions currently do not allow SBF discharges)

N/A - Not Applicable (as these regions currently do not allow SBF discharges)

WORKSHEET S: Gulf of Mexico Regional Annual Total Pollutant Loadings Summary (lbs) from New Sources

Baseline Annual Total Pollutant Loadings Summary: SBF, New Source Onsite Discharges

1	Shallow Wat	ter (<1,000 ft)	Deep Water (>1,000 ft)		Deep Water (>1,000 ft)			
Technology	Development	Exploratory	Development	Exploratory	Total	Notes		
						Total Wells = 20 SBF wells (from worksheet Well		
Discharge w/10.2% retention	3,141,820	0	14,263,307	0	17,405,127	Count Input Data)		

BAT Annual Total Pollutant Loadings Summary: SBF, New Source Onsite Discharges

BAT/NSPS Technology	Shallow Wat	ter (<1,000 ft)	Deep Water	(>1,000 ft)		
Option *	Development	Exploratory	Development	Exploratory	Total	Notes
BAT/NSPS Option 1 (Discharge						Total Wells = 20 SBF wells (from worksheet Well
w/4.03% retention)	5,026,912	0	15,214,194	0	20,241,106	Count Input Data)
BAT/NSPS Option 2 (Discharge						Total Wells = 20 SBF wells (from worksheet Well
w/3.82% retention)	4,898,112	0	14,824,376	0	19,722,488	Count Input Data)
						Total Wells = 20 SBF wells (from worksheet Well
Zero Discharge of SBF-wastes	0	0	0	0	0	Count Input Data)

Incremental Annual Total Pollutant Loadings (Reductions) Summary: SBF, New Sources* Onsite Discharges

Technology Option	Shallow Wat	er (<1,000 ft)	Deep Water	(>1,000 ft)		
	Development	Exploratory	Development	Exploratory	Total	Notes
Discharge w/10.2% retention	0	0	0	0		No reduction between baseline and current practice
BAT/NSPS Option 1 (Discharge w/4.03% retention)	1,885,092	0	950,887	0		Difference between NSPS Option 1 loadings and baseline loadings (negative incremental loadings indicate reductions)
BAT/NSPS Option 2 (Discharge w/3.82% retention)	1,756,292	0	561,069	0		Difference between NSPS Option 2 loadings and baseline loadings (negative incremental loadings indicate reductions)
Zero Discharge of SBF-wastes	(3,141,820)	0	(14,263,307)	0		Difference between zero discharge NSPS loadings and baseline 10.20% discharge loadings from the 20 wells expected to use SBF (negative incremental loadings indicate reductions)

^{**} Incremental Loadings (Reductions) = Technology Option Loadings - Baseline Loadings.

WORKSHEET T:

Summary: New Sources					
Baseline					
	Shallow Wat	ter (<1,000 ft)	Deep Water	(>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	5	0	15	0	20
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	3,141,820	0	14,263,307	0	17,405,127
Total Wells, Zero Discharge	0	0	0	0	0
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	0	0	0	0	0
No. wells, OBF	2	0	0	0	2
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	1,256,728	0	0	0	1,256,728
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	1,256,728	0	0	0	1,256,728

Summary: New Sources BAT 1

	Shallow Wat	er (<1,000 ft)	Deep Water (>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	8	0	16	0	24
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Discharge	5,026,912	0	15,214,194	0	20,241,106
Total Wells, Zero Discharge	0	0	0	0	0
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	0	0	0	0	0
No. wells, OBF	1	0	0	0	1
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	628,364	0	0	0	628,364
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	628,364	0	0	0	628,364

Summary:	New Sources
l ·	

BAT 2

	Shallow Wat	er (<1,000 ft)	Deep Water	(>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	8	0	16	0	24
Loadings/well (lbs)	16,100	33,739	24,364	54,170	
Total Wells, Zero Discharge	8	0	16	0	24
Onsite Injection (0%S: 0%D)	0	0	0	0	0
Onshore Disposal (100%S:100%D)	128,800	0	389,818	0	518,618
No. wells, OBF	1	0	0	0	1
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	628,364	0	0	0	628,364
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	628,364	0	0	0	628,364

	Shallow Water (<1,000 ft)		Deep Water	Deep Water (>1,000 ft)		
	Development	Exploratory	Development	Exploratory	Total	
No. wells, SBF	8	0	16	0	24	
Loadings/well (lbs)	612,264	1,283,045	926,523	2,060,025		
Total Loadings, Discharge	4,898,112	0	14,824,376	0	19,722,488	

Summary: New Sources BAT 3

	Shallow Water (<1,000 ft)		Deep Water	(>1,000 ft)	
	Development	Exploratory	Development	Exploratory	Total
No. wells, SBF	0	0	3	0	3
Loadings/well (lbs)	628,364	1,316,784	950,887	2,114,195	
Total Loadings, Zero Discharge	0	0	2,852,661	0	2,852,661
Onsite Injection (20%S: 0%D)	0	0	0	0	0
Onshore Disposal (80%S:100%D)	0	0	2,852,661	0	2,852,661
No. wells, OBF	7	0	8	0	15
Loadings/well (lbs)	1,885,092	3,950,352	2,852,661	6,342,584	
Total Loadings, Zero Discharge	4,398,548	0	7,607,097	0	12,005,645
Onsite Injection (20%S: 0%D)	879,710	0	0	0	879,710
Onshore Disposal (80%S:100%D)	3,518,838	0	7,607,097	0	11,125,935

WORKSHEET No. W: Summary Dry Drill Cuttings and SBF Pollutant Loadings (Reductions) for Management of SBF Cuttings, New Sources (lbs)

Total Annual Dry Drill Cuttings and SBF Baseline Pollutant Loadings

	Gulf of Mexico		
Baseline Technology	Dry Drill Cuttings	SBF	
Discharge w/10.2% retention	14,241,500	3,163,627	

N/A - Not Applicable (as these regions currently do not allow SBF discharges)

Total Annual Dry Drill Cuttings and SBF Compliance Pollutant Loadings

	Gulf	of Mexico
Technology Option	Dry Drill Cuttings	SBF
Current Practice	14,241,500	3,163,627
BAT/NSPS Option 1 (Discharge w/4.03% retention)	14,241,500	5,999,606
BAT/NSPS Option 2 (Discharge w/3.82% retention)	13,881,767	5,840,721
Zero Discharge of SBF-wastes	0	0

^{*} EPA assumes that operators will switch from OBF to SBF under both BAT/NSPS discharge options N/A - Not Applicable (as these regions currently do not allow SBF discharges)

Total Annual Dry Drill Cuttings and SBF Incremental Pollutant Loadings (Reductions)

	Gulf of Mexico			
Current Practice	Dry Drill Cuttings	SBF		
Current Practice	0	0		
BAT/NSPS Option 1 (Discharge				
w/4.03% retention)	0	2,835,979		
BAT/NSPS Option 2 (Discharge				
w/3.82% retention)	(359,733)	2,677,094		
Zero Discharge of SBF-wastes	(14,241,500)	(3,163,627)		

N/A - Not Applicable (as these regions currently do not allow SBF discharges)